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MODERN METHODS OF TREATMENT OF DISEASES OF THE NERVOUS SYSTEM

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BOSTON

It has not been many years since neurology was widely considered a purely diagnostic specialty—a *meditatio morbis*. One can look through the pages devoted to nervous diseases in almost any textbook of medicine written before the war and find scarcely a single suggestion of treatment beyond arsenic, strychnine, bromides and electricity, aside from the more obvious indications for surgery.

Yet there are specific and effective forms of treatment for neurologic diseases, and their number has shown an astonishing growth during recent years. Since so few of them have found their way into the common body of medicine, I have thought it might be of interest to review them. In assembling such a summary, I find that as a matter of fact there is so much ground to cover that certain important territories will have to be omitted entirely.

Three large and significant fields about which I shall say little are surgical. They are the territories of the treatment of injuries of the nervous system, of the surgery of tumors and of operations on the sympathetic system. Any brief summary would fail to do them justice; moreover, the story of their successes has often been brought before the medical public, and recent authoritative books are available on each.[1]

I shall leave psychiatry and psychotherapy entirely out of account as being outside my own sphere of competence. In passing, however, I should like to pay tribute to the rising standard of psychologic understanding and interest among practitioners and students of today. Though startling innovations have been rare, there is far less quarreling over doctrinal differences and far more devotion to an unprejudiced appraisal of the patient's needs of various kinds than was the case twenty years ago.[2]

In addition to these intentional omissions there are, I am sure, unintentional ones. This list of methods of treatment makes no pretensions to completeness. It consists of those which seem thoroughly established or with which I have had personal successful experience. An attempt has been made to give credit only for broad innovations, but I am quite aware that the story might have been written with an entirely different set of heroes. It is the theme that I particularly wish to bring to attention.

THE TREATMENT OF PAIN

To return to more strictly neurologic subjects: It is perhaps natural that pain should be the symptom of disease of nerve tissue which earliest demanded and first received specific relief. The use of opium dates back to prehistoric days and no real substitute for it has ever been found. According to Létiévant [3] the first recorded nerve section for neuralgia was performed by Maréchal, the court surgeon of Louis XIV. I have not been able to find any particulars. Létiévant himself, writing in 1872, was familiar with section of branches of the trigeminal, the intercostals, the occipitals and the sciatic nerves. Peripheral neurectomies have, however, largely fallen out of use except in the treatment of supraorbital neuralgia, of thrombo-angiitis obliterans [4] and of tuberculosis of the larynx.

A more refined procedure is intraspinal section of spinal posterior roots, first suggested by Charles Dana and carried out by Robert Abbe [5] of New York in 1888. This obviously has the advantage that motor power is preserved. It paved the way for that triumph of surgery, the radical cure of trigeminal neuralgia. Rose [6] was the pioneer in removal of the gasserian ganglion, but his approach has been abandoned. Horsley [7] cut the posterior root by a method resembling the modern one in 1891 but his patient died. Successful results from a practical procedure were announced by Krause [8] in 1893.

A bold step forward in neurologic treatment was suggested by Schüller in 1910 [9] and carried out by Spiller and Martin [10] in 1911, the section of the pathways for pain in the spinal cord. Aside from the prac-

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1. (*a*) Munro, Donald: Treatment of Head Injuries, Oxford Medical Publications, to be published. (*b*) Cushing, Harvey: Intracranial Tumors, Baltimore, Charles C. Thomas, Publisher, 1932. (*c*) White, J. C.: The Autonomic Nervous System, New York, Macmillan Company, 1935.

2. Ross, T. A.: An Enquiry into Prognosis in the Neuroses, London, Cambridge University Press, 1936.

3. Létiévant, J. J. E.: Traité des sections nerveuses, Paris, J. B. Baillière et fils, 1873.

4. Smithwick, R. H., and White, J. C.: Peripheral Nerve Block in Obliterative Vascular Disease of the Lower Extremity, Surg., Gynec. & Obst. **60**: 1106-1114 (June) 1935.

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7. Horsley, Victor; Taylor, J., and Coleman, W. S.: Remarks on the Various Surgical Procedures Devised for the Cure of Trigeminal Neuralgia, Brit. M. J. **2**: 1139 (Nov. 28), 1191 (Dec. 5), 1249 (Dec. 12) 1891.

8. Krause, Fedor: Entfernung des Ganglions Gasseri und des central davon gelegenen Trigeminusstammes, Deutsche med. Wchnschr. **19**: 341, 1893.

9. Schüller, Arthur: Ueber operative Durchtrennung des Rückenmarksstränge (Chordotomie), Wien. med. Wchnschr. **40**: 2292-2296, 1910.

10. Spiller, W. G., and Martin, Edward: The Treatment of Persistent Pain of Organic Origin in the Lower Part of the Body by Division of the Anterolateral Column of the Spinal Cord, J. A. M. A. **58**: 1489 (May 18) 1912.

tical value of the operation, which has now become a common and standard one, this step opened what promises to be an important epoch in neurology, that of operative intervention on structures of the central nervous system for the purpose of altering its physiology.

Except for operations on the sympathetic nervous system, which will be mentioned briefly later, the only new procedure for the relief of pain which has found wide acceptance is that introduced by Dogliotti [11] in 1931, namely the subarachnoid injection of absolute alcohol. The method was first used in this country at the Neurological Unit, as far as I am aware, and the staff has convinced itself that the method has definite though restricted value. It is a conservative method of treating mild chronic pain; for severer conditions chordotomy saves time, pain, uncertainty and the patient's motor power. A field of usefulness for the procedure of Dogliotti which deserves further study is in the treatment of certain forms of spasticity.

SURGICAL TREATMENT OF TUMORS OF THE NERVOUS SYSTEM

The first successful operation for tumor of the brain (by Godlee) was recorded in 1884.[12] A tumor of the spinal cord was removed in 1888 by Horsley.[13] Annandale [14] reported recovery after operation on an acoustic neuroma in 1893. Successful radiotherapy of a pituitary adenoma was reported by Béclère [15] in 1901. Nordentoft [16] announced successful treatment of gliomas in 1917. From these hesitating beginnings the surgery of tumors of the brain and spinal cord has made enormous strides, perhaps most strikingly signalized by Cushing's [1] review of his 2,000 verified tumors in 1932. I shall make no attempt to trace the steps of the progress, but I should like to point out that it was due largely to the successes of tumor surgery that hopes of successful forms of treatment in other departments of neurology were aroused.

THE TREATMENT OF CONVULSIONS

Epilepsy was recognized as a disease and treated in prehistoric times. While scattered "cures" have followed the use of any one of a thousand different remedies, only a few measures have come to be accepted in modern practice. One of these is the use of bromides. This was apparently first recommended by Sir Charles Locock [17] in 1857 in the course of a discussion of a paper by Sieveling. Locock's reasoning was simple: An unnamed German had tried potassium bromide on himself and found it an anaphrodisiac; it was well known that many cases of epilepsy were caused by onanism; he tried it in fourteen cases and it worked in all but one. It is still recognized as a moderately successful anticonvulsant.

A rational operative treatment for focal epilepsy was reported by Horsley [18] in 1887, namely excision of an irritable focus of the cortex. The procedure could scarcely be termed an accepted one until after the careful studies of Foerster and Penfield.[19] It appears probable that the more precise information which can now be obtained by electro-encephalography will be of particular value in selecting cases for this treatment.[20]

On the whole, the most successful treatment for the majority of patients suffering from convulsions of unknown origin is the use of phenobarbital, which was recommended for this purpose by Hauptmann [21] in 1912. It is applicable to a far larger proportion of cases than is surgery, and it has a greater anticonvulsant effect in proportion to its soporific effect than bromides or than any of the other barbiturates.

The treatment of epilepsy by ketosis was reported by Wilder [22] in 1921. It is a measure which still finds employment in some cases, particularly for petit mal in children.

The drugs at present in use for the treatment of convulsions were all primarily introduced as hypnotics, and the discovery of their anticonvulsant effect has been rather accidental. A systematic search for anticonvulsants by an experimental method was begun at the Neurological Unit in 1937 [23] and is still being continued. It has already yielded one compound, diphenylhydantoin, which appears to be more effective than phenobarbital and without appreciable soporific effect. The study of convulsions by means of electro-encephalography [20] suggests that there are several types, each due to a distinct physiologic mechanism, and possibly each will require individual study and treatment.

TREATMENT OF NEUROSYPHILIS

The recognition of syphilis of the nervous system is a relatively modern feat. It was doubtless treated with mercury even before it was recognized. According to Garrison,[24] the identity of the man who first introduced mercury into therapeutics is unknown. It is probable that, as far as neurosyphilis at least is concerned, its reign is almost over.

The story of the introduction of arsphenamine by Ehrlich [25] in 1910 is familiar to all. It is unique in history—a new conception systematically and patiently pursued by a great genius over many years, and finally a magnificent success—to be compared only with vaccination in its significance to the human race. As a treatment for parenchymatous neurosyphilis it has largely been replaced by a modification—tryparsamide,

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prepared by Jacobs and Heidelberger [26] of the Rockefeller Institute in 1917. The use of fever in the treatment of neurosyphilis has a long history in the life of one man. Wagner von Jauregg [28] apparently first noticed its effect in dementia paralytica in 1887 but he dropped the subject and returned to it only during the war. His first brief paper specifically recommending the use of malaria was published in 1918.[29] Since then the method has become a standard one.

A few years later the use of bismuth was proposed by Sazerac and Levaditi.[30] The salts of this metal have largely taken the place of those of mercury.

At the turn of the century there was no known method of treatment of syphilis that would prevent infection of the nervous system. Up to the close of the war, once neurosyphilis was established, there was little hope of arresting its course. At present the majority of early cases can be cured.

THE TREATMENT OF OTHER INFECTIONS

Among infections of the nervous system, abscess of the brain presents a problem of which the solution is obvious but difficult to attain. Successful operation on an abscess was reported by Morand [31] in 1768. The principles governing operative treatment are gaining slow recognition and there has been a gradual decline in the average operative mortality.

The next progress in controlling infections came with the rapid growth of bacteriology and immunology in the last quarter of the last century. The Pasteur prophylaxis against rabies [32] in 1885 and the antitoxin against tetanus developed by von Behring [33] in 1892 are now so successful that one can scarcely reconstruct for oneself the days when those terrible diseases were common.

Meningitis, next to syphilis the most common form of infection of the nervous system, still retains a high rate of mortality. The value of lumbar puncture in its treatment [34] is not yet fully recognized. A specific antiserum against infections with the meningococcus was introduced by Jochmann [35] in 1906. Although widely used, its value is still in some doubt. In the last two years, synthetic drugs of the type of sulfanilamide [36] have become a standard treatment, which is amazingly effective not only against infections by the meningococcus but against other pyogenic infections.

There is no accepted treatment for, or prophylaxis against, poliomyelitis, encephalitis and herpes. It has been shown that many types of "encephalitis" are in reality not infections of the brain.[37] Severe chorea of the Sydenham type, and also that occurring in pregnancy, may be effectively treated by induced fever.[38] The severe neuralgia that sometimes follows herpes usually yields to roentgen treatment.[39]

TREATMENT OF DEFICIENCY DISEASES

An increasing number of diseases of the nervous system are now being recognized as due to vitamin deficiency. The first of these was pellagra,[40] the treatment of which has now been placed on a sound basis.[41] Modern vitaminology may be said to have begun with Eijkman's [42] experiments on beriberi. He would have been surprised, perhaps, to see most polyneuritides regarded as subvarieties of beriberi,[43] including the type described by Landry.[44]

Owing to the recognition that combined systemic disease of the spinal cord is related to pernicious anemia, it is obvious that Minot and Murphy's discovery of the liver diet for the treatment of the latter should be applied to the former also. There have been disappointing results with liver treatment in some hands, but convincing evidence has been offered that arrest of progress of degeneration of the cord is the rule, and improvement is common if large enough doses are used—far larger than are needed to control the blood picture.[45]

Not only "alcoholic" polyneuritis [46] but also the characteristic confabulatory psychosis often associated with it appears to be due in part to a vitamin deficiency.[47] It is likely that the same is true of Wernicke's alcoholic poliencephalitis.[48] How effective treatment of these conditions will be remains to be seen.

TREATMENT OF DISEASES OF THE SYMPATHETIC SYSTEM

Surgery of the sympathetic nervous system had its beginnings in the last century, but its real successes have come only since the war. It is of definite value in the treatment of Raynaud's disease [49] and of Hirschsprung's disease.[50]

There have been many disappointments in the treatment of angina pectoris, but alcohol injection of the intercostal nerves as carried out by Mandl [51] appears to be a reliable method of cure of the pain. Certain obscure painful conditions of the extremities are some-

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times benefited by sympathectomy.[52] Further information should be sought in one of the recent treatises on the subject.[1c]

A recent accession to the list of conditions amenable to surgery is the carotid sinus syndrome. The clinical importance of the condition has been pointed out by Weiss [53] and the possibility of its surgical relief has been demonstrated at the Boston City Hospital.

Whether or not migraine should be included among surgical diseases is open to question. Cervical sympathectomy,[54] injection of alcohol into the gasserian ganglion,[55] section of the temporal artery and of the meningeal artery [56] have all been followed by success in some instances and failure in others. A remarkable medical treatment for individual attacks of migraine is the use of ergotamine tartrate.[57]

THE TREATMENT OF PARALYSIS AGITANS AND ATHETOSIS

One of the most familiar diseases of the nervous system is paralysis agitans. The only accepted treatment for this often distressing condition is the use of drugs of the atropine series, apparently first suggested by Charcot.[58] Enormous doses are sometimes tolerated but are often ineffective. Recently the use of a fresh hot decoction in white wine has found wide and apparently successful use in Italy. Some of my patients have told me that moderate doses of alcohol, alone or with scopolamine, are valuable. The asthenia that often accompanies the disease may sometimes be relieved in the postencephalitic types of paralysis agitans by administration of amphetamine (benzedrine) sulfate,[59] which is also a fairly reliable remedy for the oculogyric crises which accompany it.

In extremely severe unilateral cases the resort to surgery may be justified. Bucy [60] has recently demonstrated that the tremor may be abolished by an extensive resection of the motor cortex—a possibility vaguely foreshadowed by Parkinson himself.[61] At the Neurological Unit a similar result has been obtained by section of the pyramidal tract in the spinal cord, which impairs the function of the corresponding limbs to an astonishingly slight extent.[62]

The somewhat rarer but often far more distressing condition of athetosis has received less attention than it deserves. The first successful attempt at its relief, excision of the corresponding motor cortex, was reported in 1909 by Horsley,[63] and his method has been further developed by Bucy and his associates.[64] The method first used at the Neurological Unit in 1931 accomplishes the same object by section of the extrapyramidal tracts in the spinal cord.[65] It can be used in bilateral cases (best in two stages) and does not destroy the use of the extremities.

A promising start in the medical treatment of athetosis has been made by West.[66] He has shown that the intravenous administration of curare will depress abnormal movements for several days, and this has been confirmed by Burman [67] and at the Neurological Unit. Obviously, the method is not suitable for general use at present, but a search for more practical drugs is under way.

The most successful treatment for spasmodic torticollis is the operation devised by Dandy: [68] section of the first four cervical roots and the spinal accessories.

THE TREATMENT OF HYDROCEPHALUS

The importance of hydrocephalus as a disease has been underestimated. According to Murphy [69] it occurs in the proportion of more than one and one-half times in every thousand "white" births; that is, there are probably two or three thousand hydrocephalic infants born every year in this country. Most hydrocephalic infants are mentally defective from the outset, and these are doomed in any case. Many of them, however, —perhaps a fourth—are apparently capable of growing up normally if the pressure can be relieved. There have been isolated successes from various types of operations (reviewed by Davidoff [70]), but only recently have technical improvements permitted a series large enough for statistical purposes to be accumulated.[71] In selected cases the operative mortality may be as low as 10 per cent after bipolar coagulation of the choroid plexuses. When hydrocephalus and spina bifida coexist, an alternative method of relief has been successful in a few instances, namely resection of the abnormal mass of tissue which apparently blocks the circulation of fluid.[72]

TREATMENT OF SYRINGOMYELIA

Syringomyelia is a hereditary malformation which often exists without giving rise to symptoms. About 60 per cent of cases are improved by persistent treatment with x-rays.[73] In cases resistant to irradiation

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and especially those in which there is pain or a subarachnoid block, operative drainage of the syrinx may afford some relief. This operation was first recorded by Elsberg [74] and was applied in a systematic fashion and recommended by Puussepp [75] of Estonia, where the condition is apparently far more common than in this country.

TREATMENT OF MÉNIÈRE'S SYNDROME

A method of treatment of recurrent attacks of vertigo, by destruction of the labyrinths, was suggested by Lake [76] in 1904. The operation of section of the auditory nerve was first carried out by Frazier [77] in 1910. Both types of procedure were long neglected and have only recently come into their rightful places.[78] In addition to the modern operations, medical treatment, which is often effective, has been proposed by Furstenberg.[79]

NEW MEDICAL REMEDIES FOR MISCELLANEOUS DISEASES

Narcolepsy is a disease which is often overlooked or untreated. The overpowering drowsiness which characterizes it is satisfactorily combated by amphetamine sulfate, for which the patients often have a high tolerance.[80] Since the introduction of the drug for this purpose it has been widely used in the treatment of asthenia, fatigue and debility of many types [81] perhaps too widely, for it is not a drug for indiscriminate use.

An effective treatment for myasthenia gravis was found by Mary Walker [82] in 1935, namely prostigmine, a synthetic substitute for physostigmine.[83] Myotonia, a disease which is in many ways the opposite of myasthenia (both are apparently disorders of the chemical transmission of the nerve impulse), was relieved by the use of quinine by Kennedy and Wolf [84] in 1936.

TWO MECHANICAL SUBSTITUTES FOR NERVOUS FUNCTIONS

There are many disease states which produce a temporary cessation of respiration but are not necessarily fatal otherwise. A respirator was designed by Drinker [85] in 1929 primarily for use in resuscitation from asphyxia and electric shock. It is, however, finding a larger and constantly expanding use in the treatment of poliomyelitis, polyneuritis and injuries to the spinal cord. A respirator should be part of the equipment of every neurologic service.

Many deaths have resulted from infection of the bladder and kidneys following disease of the spinal cord. A practical device for preventing cystitis was devised by Laver and perfected by Munro in 1934,[86] namely a tidal drainage apparatus on the principle of a Tantalus siphon. The importance of the apparatus extends far beyond the comfort of the patient and the saving in bed linen. The prevention of infection permits a degree of recovery of damaged nerve tissue which would never be possible otherwise. It is simple and inexpensive and should be available in every hospital.

THE PROSPECT OF FURTHER ADVANCES

Since the war, and especially during the past ten years, something of a revolution has taken place in the field of clinical neurology. From a static branch of medicine, with the ideal of predicting irreversible structural changes from rigidly classified syndromes, it has become more dynamic by advancing in two directions. One is toward interpretation of the activities of an injured nervous system in terms of neurophysiology and thence toward remedying the defect. Examples of this type of analysis and systematic attempts at applications of physiologic knowledge are the recent steps forward in the treatment of epilepsy, paralysis agitans and athetosis, and longer strides in the same directions are unquestionably in prospect.

Another type of dynamic concept which is relatively new in neurology is an analysis of the mechanism and pathogenesis of diseases of the nervous system. The gross and microscopic appearances of the brain and cord in practically all diseases known today were described before the turn of the century. The stages in breakdown of various tissue elements have been thoroughly studied. Attention is now centered on the steps preceding irreparable damage. Arteriosclerosis and neurosyphilis were probably the first diseases in which attempts at dynamic interpretation were made and are still being continued. The mechanism and pathogenesis of multiple sclerosis, next to neurosyphilis and epilepsy the most important disease of the nervous system, are now fairly clear.[87] Similar advances in the pathology of the deficiency diseases,[48] progressive muscular atrophy [88] and amyotrophic lateral sclerosis [88] are in progress and in the course of time will certainly bear fruit.

The practical understanding and treatment of nervous and mental diseases are still in an expanding stage. The subject grows more complicated with each year that passes, and while there is a proper tendency for diseases formerly considered to lie within the jurisdiction of the neurologist to pass into the hands of internists and general surgeons—for example tetany and hyperthyroidism—the specialized knowledge and interest of trained neurologists, provided with adequate and independent facilities for research, is essential for real progress in the comprehension of many obscure and intricate problems. To reduce clinical neurology to a subdepartment is to subordinate the welfare of patients suffering from diseases of the nervous system.

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EFFECT OF ALCOHOL ON NORMAL KIDNEY AND KIDNEY OF BRIGHT'S DISEASE

AN EXPERIMENTAL STUDY

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THE EXCRETION OF ALCOHOL BY THE KIDNEY

Alcohol is assumed frequently to be a renal irritant, although the amount eliminated by the kidney after its ingestion is relatively small. Miles [1] has shown that after a single dose of alcohol (about 0.5 cc. per kilogram of body weight) in a human being only 1.2 to 1.6 per cent of the amount ingested is excreted within the first two hours. In the next six hours approximately 0.3 per cent is excreted; the urine is practically alcohol free in eight hours. Haggard and Greenberg [2] have shown that in dogs the percentage of the total amount of alcohol lost through the kidneys depends on the quantity of urine passed and that in sixteen hours varies from 2.4 to 4.3 per cent of the alcohol ingested. These values confirm the earlier work of Binz,[3] Heubach [4] and others.[5] In a fatal case of alcohol poisoning, Juckenack [6] found the concentration of alcohol in the kidney to be 0.37 per cent and in the urine 0.65 per cent.

ALCOHOL AND BRIGHT'S DISEASE

In 1932 Langmead and Hunt [7] said "The drinker undoubtedly shows some increasing susceptibility to inflammation of the kidney (Bright's disease). . . . Whatever the causal mechanism, there is abundant clinical experience that alcohol may promote chronic nephritis." The treatise in which this statement occurred carried an editorial footnote to the effect that this opinion is not held in this country and that it is not known that alcohol causes chronic nephritis, although its use may aggravate the symptoms of the disease. In 1924 Vogelius [8] wrote that "very few authors deny the importance of alcohol intoxication in the occurrence of renal disease." Of the forty-two patients with chronic alcoholism studied by Vogelius, tests of renal function revealed the presence of renal disease in twenty. Scheel [9] stated that alcoholism in conjunction with other factors may contribute to the development of true contracted kidney. Zundell, Volhard and Strauss [9] maintained that alcohol exerted a definite influence on the kidney; its use in acute nephritis was absolutely forbidden, whereas in the chronic forms the restriction was less severe. Von Noorden [9] prescribed alcohol for nephritic patients only when the appetite had to be increased or the heart stimulated. In 1926 MacNider [10] studied the effect of alcohol and of alcoholic beverages on the kidneys of normal and of naturally nephropathic dogs. He found that in normal dogs alcohol was only slightly nephrotoxic whereas naturally nephropathic dogs were more susceptible to the toxic effect of the same amount of alcohol; moreover, both the normal dogs and the dogs with renal disease showed an increased toxicity to alcoholic distillates. Moschini [11] reported a case of nephrosis in a nursing infant of 4 months in whom the renal lesion, according to this writer, was due to alcoholism of the mother.

However, a number of authors have published data indicating that alcohol does not initiate or aggravate renal disease. Friedenwald [12] fed a large series of rabbits somewhat excessive doses of either alcohol or whisky daily to the point of intoxication. Although a small number of these animals began to show albumin and casts in the urine after two months of such treatment, the pathologic changes thus produced in the kidney were unlike those seen in chronic nephritis. In 1910 Hultgen [13] investigated 460 patients with chronic alcoholism and showed that only 9.1 per cent of these manifested any evidence of nephritis. Moreover, only 5.2 per cent of the 460 drinkers showed any permanent albuminuria. He concluded that alcohol taken daily, as it is by the chronic inebriate, is not an irritant to the kidneys. Wegelin [14] reported definite changes in the kidney in only seven of 106 chronic alcoholic addicts. Ziegler and Horner,[15] in a recent pathologic study of twenty chronic alcoholic addicts, found only slight glomerular lesions in 20 per cent. Mosenthal [16] maintained that alcohol does not damage the renal parenchyma and that it may be prescribed without hesitation in renal disorders, even when patients are seriously ill. Masci [17] reported an interesting case of acute nephritis in a 41 year old man, who, tired of his restricted regimen, imbibed 2,500 cc. of white wine in three hours. Anuria developed, lasting for twenty-four hours; this was followed by the excretion of markedly hemorrhagic urine. The patient, however, began to improve readily and within ten days after the ingestion of the wine was pronounced cured. The urine was protein free and con-

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tained no red blood cells or casts. The permanence of the cure was proved by a recheck several months later.

In view of the somewhat conflicting evidence as to the effect of alcohol and of alcoholic beverages on the normal and the diseased kidney, it seemed worth while to reinvestigate this problem, since accurate methods are available today for studying the degree of irritation and functional capacity of the kidneys.

MATERIAL AND METHODS

Twenty-one subjects have been studied, of whom five were free from renal disease, five had acute diffuse glomerular nephritis, seven had chronic diffuse glomerular nephritis and five had arteriosclerotic nephritis (nephrosclerosis). All subjects were kept at complete bed rest. The diet was kept constant throughout the course of study. Addis counts [18] were carried out on twelve hour specimens of urine voided from 7 p. m. to 7 a. m. It was impossible to precede this period by a twelve hour dry diet, as suggested by Addis, since in many cases the restriction of fluid was contraindicated and at other times alcohol was given. For this reason patients were placed on a dry diet three hours prior to the twelve hour collection of urine. Addis counts were carried out daily for from three to five or more days, until the number of formed elements in the urinary sediment exhibited some degree of consistency. Urinary volume was carefully measured, the protein excretion determined [19] and the reaction of the urine noted. After control Addis counts showed satisfactory agreement, an experimental day was set aside in which two determinations of urea clearance [20] covering two hours each were carried out before and immediately after the ingestion of alcohol. The amount of alcohol given varied from 50 to 200 cc. of a 25 per cent solution by volume of pure ethyl alcohol or of distilled bonded whisky in amounts equivalent to 100 or 200 cc. of 25 per cent pure ethyl alcohol. After the larger doses, signs of intoxication were invariably present, though only to a mild degree. Specimens of blood were analyzed for urea nitrogen [21] and nonprotein nitrogen,[22] and the urea ratio [23] was calculated. The alcohol content of the blood was also determined.[24] On the day on which the alcohol was given the dry diet, starting at 4 p. m., was resumed and the urine collected from 7 p. m. to 7 a. m. the following day. On the following day, if alcohol was again taken, the urea clearance was determined before and after. However, if no alcohol was given on this particular day, the urea clearance was again determined in the afternoon. In most cases Addis counts were carried out for several days after the ingestion of one or more doses of alcohol.

TABLE 1.—*The Immediate Effect of Alcohol and of Alcoholic Liquors on the Normal Kidney and on the Kidney of Bright's Disease*

Case	Age	Sex	Alcohol Ingested: Type	Alcohol Ingested: Quantity	Positive Results
				Normal Group	
3	26	♂	Alcohol	200 cc. 25% solution	Diuresis; urine: red blood cells and white blood cells increased but not above normal; blood urea nitrogen slightly increased
6	42	♀	Alcohol	200 cc. 25% solution	Diuresis; urine: red blood cells increased but not above normal, white blood cells and casts increased above normal; blood: urea nitrogen and urea ratio slightly increased; urea clearance increased
9	20	♀	Alcohol	200 cc. 25% solution	No significant effects
10	35	♂	Alcohol	200 cc. 25% solution	Urea clearance increased
11	16	♂	Alcohol	50 cc. and 100 cc. 25% solution in 48 hours	Diuresis; Urine: red blood cells, white blood cells and casts increased but not above normal
				Group with Acute Diffuse Glomerular Nephritis	
2	44	♂	Alcohol	2 doses of 200 cc. 25% solution in 24 hours	Diuresis; proteinuria increased; urine: red blood cells, white blood cells and casts increased; blood: urea nitrogen and nonprotein nitrogen increased
16	30	♂	Scotch whisky	57.5 and 115 cc. in 24 hours, equivalent to 100 cc. and 200 cc. 25% solution of alcohol	Slight diuresis; blood: urea nitrogen and nonprotein nitrogen increased
19	29	♂	Rye whisky	50 and 100 cc. in 24 hours, equivalent to 100 cc. and 200 cc. 25% solution of alcohol	Diuresis; blood: urea nitrogen increased slightly after first dose of alcohol but decreased after second; urea clearance decreased after first dose of alcohol but increased after second
21	30	♂	Rye whisky	50 and 100 cc. in 24 hours, equivalent to 100 cc. and 200 cc. 25% solution of alcohol	Urine: consistent decrease in red blood cells, white blood cells and casts not impaired by ingestion of whisky; blood: urea nitrogen and nonprotein nitrogen decreased
				Group with Chronic Diffuse Glomerular Nephritis	
7	23	♂	Alcohol	200 cc. 25% solution	No significant effects
8	33	♀	Alcohol	200 cc. 25% solution	Blood urea nitrogen decreased; urea clearance increased
12	25	♂	Alcohol	50 cc. and 100 cc. 25% solution in 24 hours	Diuresis; blood: urea nitrogen and urea ratio decreased; urea clearance increased
13	42	♀	Alcohol	50 cc. 25% solution	Diuresis; urea clearance slightly decreased
14	17	♂	Alcohol	50 cc. and 100 cc. 25% solution in 24 hours	Diuresis; blood urea nitrogen increased; urea clearance decreased
15	15	♀	Scotch whisky	2 doses of 57.5 cc. in 24 hours, equivalent to 100 cc. 25% solution of alcohol each	Urine: red blood cells and casts decreased; urea clearance temporarily decreased
17	50	♂	Rye whisky	50 cc. and 100 cc. in 24 hours, equivalent to 100 cc. and 200 cc. 25% solution of alcohol	Diuresis after second dose only; proteinuria increased
				Group with Arteriosclerotic Nephritis	
1	62	♂	Alcohol	2 doses of 200 cc. 25% solution in 24 hours	Diuresis; proteinuria increased; urine: red blood cells and white blood cells increased; urea clearance decreased
4	41	♀	Alcohol	200 cc. 25% solution	Urine: casts increased; urea clearance decreased
5	52	♀	Alcohol	200 cc. 25% solution	Blood urea nitrogen increased; urea clearance decreased
18	50	♂	Rye whisky	50 cc. and 100 cc. in 24 hours, equivalent to 100 cc. and 200 cc. 25% solution of alcohol	Urine: red blood cells and casts increased
20	44	♂	Rye whisky	50 cc. and 100 cc. in 24 hours, equivalent to 100 cc. and 200 cc. 25% solution of alcohol	Diuresis; urine: red blood cells, white blood cells and casts increased; urea clearance decreased

RESULTS

The pertinent data and positive observations in all cases are given in table 1. The results may be summarized briefly as follows: 1. In subjects with normal

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kidneys the ingestion of alcohol was occasionally followed by an increase in the excretion of red blood cells, white blood cells and casts in the urine, but the values were rarely elevated above the average normal range. Proteinuria was not induced, nor did any measurable impairment of renal function occur. 2. Alcohol rarely augmented the proteinuria in patients with Bright's disease. 3. Moderate diuresis was frequently induced (this occurred even in patients with marked impairment of renal function). 4. Alcohol did not increase the number of red blood cells and casts in the urine of persons with acute diffuse glomerular nephritis (with the exception of patient 2) or of patients with chronic diffuse glomerular nephritis. The ingestion of alcohol or whisky by patients with arteriosclerotic nephritis (nephrosclerosis) produced a transient increase in the Addis count (with the exception of patient 5). 5. The renal function remained unchanged after the ingestion of alcohol by persons with acute and chronic diffuse glomerular nephritis. It did not delay the recovery of patients with acute diffuse glomerular nephritis, who showed a gradual improvement in renal efficiency. Impairment of renal function was increased temporarily by the ingestion of alcohol by patients with arteriosclerotic nephritis (nephrosclerosis).

Typical detailed studies of cases of acute diffuse glomerular nephritis, chronic diffuse glomerular nephritis and arteriosclerotic nephritis are given in tables 2, 3 and 4. Table 2 demonstrates that the ingestion of 150 cc. of rye whisky (equivalent to 300 cc. of a 25 per cent solution of pure ethyl alcohol) does not impair the gradual improvement in the Addis count of a patient

TABLE 2 (CASE 21).—*Observations on a Man Aged 30 with Acute Diffuse Glomerular Nephritis*

Date	Time	Volume, Cc.	Specific Gravity	Reaction	Albumin: Gm. per 100 Cc.	Albumin: Total, Gm.	Addis Count: R.B.C. × 10^6	Addis Count: W.B.C. × 10^6	Addis Count: Casts × 10^6	Urea Nitrogen, Mg. per 100 Cc.	Nonprotein Nitrogen, Mg. per 100 Cc.	Urea Ratio, %	Urea Clearance, % of Normal	Blood Alcohol, Mg. per Cc.
19-20	12 hr.	720	19	Acid	....	....	34.92	17.28	2.400	....	....	..	....	....
23-24	12 hr.	620	19	Acid	1.63	10.1	62.00	23.54	3.440	....	....	..	....	....
24-25	12 hr.	470	20	Acid	1.50	7.1	85.00	28.43	3.159	....	....	..	....	....
31-1	12 hr.	780	16	Acid	0.62	4.8	24.57	11.44	3.250	....	....	..	....	....
1-2	12 hr.	620	15	Acid	0.75	4.7	12.40	10.54	2.720	....	....	..	....	....
2-3	12 hr.	860	14	Acid	0.53	4.5	26.60	17.53	3.490	....	....	..	....	....
3-4	12 hr.	730	15	Acid	0.82	5.9	25.55	18.99	1.070	....	....	..	....	....
4-5	12 hr.	830	16	Acid	0.57	4.7	10.70	7.05	1.820	....	....	..	....	....
6-7	12 hr.	740	18	Acid	0.87	6.5	33.30	10.60	1.256	....	....	..	....	....
7-8	12 hr.	1,900	8	Acid	0.15	2.8	11.72	9.50	0.739	....	....	..	....	....
8	12-2	.....	...	.....	....	....	.....	.....	.....	21.7	42.2	51	70.3	0
	2	Ingested 50 cc. of rye whisky												
	2-4	.....	...	.....	....	....	.....	.....	.....	21.8	40.8	53	66.2	0.50
8-9	12 hr.	1,430	7	Acid	0.13	1.9	10.25	5.24	0.352	....	....	..	....	....
9	12-2	.....	...	.....	....	....	.....	.....	.....	18.6	....	..	74.4	0
	2	Ingested 100 cc. of rye whisky												
	2-4	.....	...	.....	....	....	.....	.....	.....	18.7	38.0	49	70.5	0.90
9-10	12 hr.	1,250	10	Acid	0.23	2.9	7.91	4.58	0.486	....	....	..	....	....
10	12-2	.....	...	.....	....	....	.....	.....	.....	16.1	30.0	53	72.3	0
10-11	12 hr.	790	16	Acid	0.50	4.0	6.84	11.32	0.556	....	....	..	....	....
11-12	12 hr.	550	15	Acid	....	....	3.66	5.86	0.520	....	....	..	....	....
13-14	12 hr.	440	17	Acid	1.25	5.5	3.37	5.28	0.970	....	....	..	....	....
14-15	12 hr.	930	15	Acid	0.83	7.7	2.35	3.72	0.782	....	....	..	....	....

TABLE 3 (CASE 12).—*Observations on a Man Aged 25 with Chronic Diffuse Glomerular Nephritis*

Date	Time	Volume, Cc.	Specific Gravity	Reaction	Albumin: Gm. per 100 Cc.	Albumin: Total, Gm.	Addis Count: R.B.C. × 10^6	Addis Count: W.B.C. × 10^6	Addis Count: Casts × 10^3	Urea Nitrogen, Mg. per 100 Cc.	Nonprotein Nitrogen, Mg. per 100 Cc.	Urea Ratio, %	Urea Clearance, % of Normal	Blood Alcohol, Mg. per Cc.
26-27	12 hr.	770	8	Acid	0.68	5.2	15.4	19	118.6	....	....	..	....	....
27-28	12 hr.	1,100	6	Acid	0.57	6.3	46.0	24	285.0	....	....	..	....	....
28-29	12 hr.	730	6	Acid	0.74	5.4	54.0	36	890.0	....	....	..	....	....
31-1	12 hr.	450	8	Acid	1.00	4.5	25.0	20	479.0	....	....	..	....	....
1	12-2	.....	...	.....	....	....	....	..	.....	43.4	53.1	82	12.3	0
	2	Ingested 50 cc. of 25% alcohol												
	2-4	.....	...	.....	....	....	....	..	.....	36.9	48.8	75	16.2	0.20
1-2	12 hr.	615	8	Acid	0.98	6.0	42.0	25	284.0	....	....	..	....	....
2	12-2	.....	...	.....	....	....	....	..	.....	32.2	51.3	63	15.7	0
	2	Ingested 100 cc. of 25% alcohol												
	2-4	.....	...	.....	....	....	....	..	.....	32.6	51.3	64	18.5	0.60
2-3	12 hr.	1,270	2	Neutral	0.40	5.1	23.0	5	0*	....	....	..	....	....
3	12-2	.....	...	.....	....	....	....	..	.....	33.0	47.3	69	16.2	0
3-4	12 hr.	710	6	Acid	0.69	4.9	63.0	14	477.0	....	....	..	....	....

* The absence of casts in this specimen was probably accounted for by the neutral reaction of the urine.

TABLE 4 (CASE 20).—*Observations on a Man Aged 44 with Arteriosclerotic Nephritis*

Date	Time	Volume, Cc.	Specific Gravity	Reaction	Albumin: Gm. per 100 Cc.	Albumin: Total, Gm.	Addis Count: R.B.C. × 10^6	Addis Count: W.B.C. × 10^6	Addis Count: Casts × 10^3	Urea Nitrogen, Mg. per 100 Cc.	Nonprotein Nitrogen, Mg. per 100 Cc.	Urea Ratio, %	Urea Clearance, % of Normal	Blood Alcohol, Mg. per Cc.
8-9	12 hr.	850	16	Acid	0.83	7.1	3.95	3.28	440.9	....	....	..	....	....
9-10	12 hr.	550	21	Acid	0.92	5.0	3.30	3.12	427.7	....	....	..	....	....
13-14	12 hr.	730	17	Acid	1.70	12.4	2.19	4.26	608.0	....	....	..	....	....
14-15	12 hr.	820	15	Acid	0.99	8.1	1.64	2.05	533.0	....	....	..	....	....
15-16	12 hr.	720	17	Acid	0.72	5.2	1.80	2.64	333.0	....	....	..	....	....
16	12-2	.....	...	.....	....	....	....	....	.....	22.2	40.5	54	57.9	0
	2	Ingested 50 cc. of rye whisky												
	2-4	.....	...	.....	....	....	....	....	.....	21.0	36.6	57	64.2	0.60
16-17	12 hr.	1,320	16	Acid	0.47	6.2	2.62	4.62	831.0	....	....	..	....	....
17	12-2	.....	...	.....	....	....	....	....	.....	18.6	40.0	47	58.3	....
	2	Ingested 100 cc. of rye whisky												
	2-4	.....	...	.....	....	....	....	....	.....	17.3	39.5	44	30.7	1.10
17-18	12 hr.	1,395	15	Acid	0.27	3.7	18.07	4.40	430.0	....	....	..	....	....
18	12-2	.....	...	.....	....	....	....	....	.....	21.6	36.6	59	41.3	0
21-22	12 hr.	1,000	14	Acid	0.77	7.7	5.17	4.00	240.0	....	....	..	....	....

with acute diffuse glomerular nephritis. Table 3 shows that the ingestion of 150 cc. of a 25 per cent solution of alcohol by a patient with chronic diffuse glomerular nephritis is not followed by any deleterious effect on renal function; in fact, the functional capacity of the kidneys shows some improvement, as indicated by a decrease in the urea nitrogen content of the blood, by a diminution in the urea ratio and by an increase in the urea clearance. Table 4 demonstrates a marked increase in the number of red blood cells in the urine and a decrease in the urea clearance for a patient with arteriosclerotic nephritis after the ingestion of 100 cc. of rye whisky (equivalent to 200 cc. of a 25 per cent solution of alcohol). No significant effect was observed after the first and smaller dose, 50 cc. of rye whisky.

COMMENT

These studies do not answer the question as to the part played by alcohol in the causation of Bright's disease. However, it is significant that acute and chronic diffuse glomerular nephritis are not aggravated by alcohol and whisky in the doses given, whereas a transient deleterious effect is observed frequently on arteriosclerotic nephritis.

The following hypothetic considerations are offered in an attempt to explain these observations: Since the taking of alcohol in moderate doses is followed by a peripheral vasodilatation (as indicated by the feeling of warmth and flushing of the skin), a redistribution of blood after its ingestion may diminish the flow of blood through the kidneys. In cases of arteriosclerotic nephritis, diverting blood from the kidney to the skin may aggravate the renal lesion, since in such cases the flow of blood is already impaired by vascular sclerosis. With glomerular lesions, however, particularly acute diffuse glomerular nephritis, such a redistribution of blood would tend to reduce congestion in the glomeruli and the taking of alcohol in moderate doses may even be desirable or at least not be followed by undesirable effects.

The diuresis frequently noted after the ingestion of alcohol or of alcoholic beverages is of clinical importance. The diuretic effect is considered to be due to the large amount of fluid usually imbibed with it or to the presence of other substances (as in the distillates), especially volatile oils, and not to a specific action of the alcohol. In 1910 Mendel and Hilditch [25] gave two young men 96 cc. of 95 per cent alcohol daily in six doses of 16 cc. each and obtained no diuretic response. Their work has been quoted widely, even in modern textbooks,[26] to indicate that alcohol per se is not a diuretic agent. This contention, however, has been refuted by an appreciable amount of work carried out since 1910.[27] The present studies show that alcohol increases the output of urine, even in the presence of decreased functional capacity of the kidneys.

CONCLUSIONS

Alcohol or whisky in moderate doses rarely augments the proteinuria of patients with Bright's disease. Moderate diuresis may be induced even in the presence of marked impairment of renal function. Alcohol or whisky has no deleterious effect on the kidneys of normal subjects, nor does it aggravate the renal lesion in patients with acute or chronic diffuse glomerular nephritis. In patients with arteriosclerotic nephritis (nephrosclerosis) the ingestion of alcohol or of whisky is followed frequently by a transient increase in the number of red and white blood cells and casts excreted in the urine and by a temporary diminution in renal function.

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APPENDICITIS IN ADULTS

REVIEW OF 2,000 CONSECUTIVE CASES, WITH COMMENTS ON THE RISING MORTALITY OF THE ACUTE SUPPURATIVE TYPE

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In 1931 one of us [1] reviewed the records of 1,000 consecutive cases of acute suppurative, acute simple and chronic appendicitis in adults as they occurred in the files of Woman's Hospital. This nomenclature was used in accordance with the pathologic reports on the appendixes sent to the hospital laboratory.

In this paper we present a review of the next thousand cases in adults and compare this series with the former one. We were anxious to learn whether there were wide variations in the statistics and to try to explain them if possible (table 1).

It may be seen that there are no great variations in the data for the two series except for the marked increase in the death rate of acute suppurative appendicitis; this rate has increased from 9 per cent in the first series to 23 per cent in the second. Quain and Waldschmidt [2] reported a mortality rate of 10 per cent in a series of 1,000 cases between 1919 and 1927 and found, as we did, that there was a sharp increase in the mortality to 18.8 per cent in their second series of 1,000 cases during the depression years.

Forty-five of 193 patients in the second group with acute suppurative appendicitis died; the causes are shown in table 2.

In the earlier series the proportions were about the same. These data agree with those of McKenna [3] and Davis and his associates.[4] Davis found among fifty-five deaths forty-one due to immediate and fourteen to remote causes. In McKenna's series fifty-nine were due to immediate and nineteen to remote causes.

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WHY HAS THIS MORTALITY INCREASED?

The increase in mortality can be explained in three words: delay in operation. We have in mind three causes for this delay:

A. *Changed Economic Conditions.*—The first thousand cases occurred from about 1925 to 1930, when the nation was in a prosperous state economically. The second series of 1,000 occurred from 1931 to 1936, when conditions were entirely different. The records show that in the early series the patients were ill for 3.8 days before operation and in the later series for 4.9 days. This means that during these depression years patients delayed operation 29 per cent longer than in better times. This surely increased the mortality rate. Quain and Waldschmidt [2] found that the average time between onset of illness and operation was more than twenty-four hours longer in the second series than in the first and attributed their increase in mortality in part to this delay.

B. *Home Treatment, Especially with Laxatives.*—This subject may be a corollary of the previous one, because the increase of the use of home measures probably is a mirror of the economic state. During the delay in reaching surgical aid the patient is using various medicines suggested by those about him, and among them, unfortunately, are laxatives. We have gleaned from the records the facts that in the 1925-1930 series 24 per cent of the patients reported the taking of laxatives for their attack, whereas during the later series 42 per cent reported having done so. We feel that the increase of laxative taking has been partly responsible for the increase in mortality. Of the patients who died of what we term immediate causes twenty-one, or 67 per cent, reported taking laxatives.

We believe that credit should go to Bower [5] of Philadelphia for actively campaigning for education of the public in this regard. He compiled the results obtained in several hospitals and found that of 306 patients who died of acute suppurative appendicitis 147, nearly half, had taken laxatives. In another series he reported that 91.6 per cent of 214 patients who died of acute diffuse peritonitis had taken them. Blackburn [6] reported a series of cases in which one of sixteen patients who used a purgative died, whereas of those who had not used laxatives only one of 109 died.

In our series we tried to estimate from the history the length of time from the rupture of the appendix until the operation.

Twenty-eight of our 190 patients with acute suppurative appendicitis in the second series were operated on less than twenty-four hours after the rupture; only 3.5 per cent died. Of eighty-six who were operated on forty-eight or more hours after rupture, 32 per cent died.

Giertz [7] of Stockholm found about the same proportions. His figures are 3.5 per cent mortality if the operation was done within forty-eight hours of the onset of peritonitis and 23 per cent if more than forty-eight hours had intervened.

C. *Delay in Operation Because of Urinary Abnormality.*—In going over the records we were not surprised to find the usual variations in leukocyte counts, temperature and pulse readings, but we did not expect to find so many laboratory reports of red blood cells in the urine. In the first series only those cases in which a considerable number of red blood cells were reported by the laboratory were noted in the statistics, whereas in the second series any mention of red blood cells, even though of only an occasional cell, was noted, which may account in part for the great variance.

Hematuria Associated with Acute Appendicitis: It has often been said jocularly that every patient with chronic genito-urinary symptoms has a McBurney scar. Genito-urinary symptoms and signs may often obscure the picture of acute appendicitis and thereby delay operation and increase the mortality rate. Hematuria is the most important offender among the urinary abnormalities and deserves discussion.

Collins [8] reported 1,402 consecutive cases of emergency appendectomy. Hematuria was found in 8.8 per cent of these. He stated that exclusion of other causes of the hematuria delayed operation an average of four hours and increased mortality from 4.7 to 6.2 per cent. In our series, with acute and suppurative appendicitis

TABLE 1.—*Composite Statistics (in Percentages)**

	Acute	Chronic	Suppurative	Total
Male	41 **49**	27 **47**	60 **60**	37.6 **50.0**
Female	59 **51**	73 **53**	40 **40**	62.4 **50.0**
Pain	99 **92**	98 **93**	99.5 **98**	98.5 **76.7**
Nausea	66 **66**	47 **30**	78 **78**	58.7 **58.2**
Vomiting	52 **48**	28 **17**	66 **63**	42.4 **42.3**
Constipation	38 **39**	40 **21**	32 **35**	38.1 **33.0**
Rigidity	51 **59**	20 **4.8**	77 **79**	40.7 **47.5**
Distention	7.5 **22**	5.0 **2.4**	18 **34**	8.5 **18.8**
Tenderness at McBurney's point	56 **69**	50 **34**	43 **64**	44.5 **58.6**
Tenderness in right lower quadrant	38 **74**	50 **50**	53 **73**	45.9 **67.1**
Complications	4.0 **4.0**	6.0 **6.8**	7.7 **14**	5.8 **6.8**
Results (deaths)	2.7 **1.2**	1.4 **1.0**	9.3 **23.0**	3.3 **5.4**
Urinary data	W.B.C. 2.0 **14.6** R.B.C. 1.0 **5.6** Casts 0.0 **0.8**	W.B.C. 3.0 **15.2** R.B.C. 1.0 **3.9** Casts 0.8 **2.1**	W.B.C. 5.0 **24.2** R.B.C. 2.0 **12.1** Casts 1.2 **0.6**	W.B.C. 3.3 **18.0** R.B.C. 1.3 **7.2** Casts 0.6 **1.6**
Average values				
Temperature	99.9 **100.7**	98.7 **99.1**	100.4 **101.1**	99.7 **100.2**
Pulse rate	95.5 **98.0**	86.2 **84.0**	101.0 **104.0**	94.2 **94.5**
White blood cell count	14,340 **15,480**	10,660 **7,940**	17,320 **14,600**	14,100 **12,325**

* The figures for the first series are in regular type; for the second, in boldface.

5. Bower, J. O.: The Mortality of Acute Appendicitis, J. A. M. A. **99**: 1765-1768 (Nov. 19) 1932.

6. Blackburn, J. H.: The Factors that Maintain the High Death Rate in Acute Appendicitis, South. M. J. **28**: 141-144 (Feb.) 1935.

7. Giertz, K. N.: Twenty-Five Years' Experience in the Treatment of Peritonitis, Ann. Surg. **104**: 712-735 (Oct.) 1936.

8. Collins, D. C.: Hematuria Associated with Acute Appendicitis, Urol. & Cutan. Rev. **42**: 22 (Jan.) 1938.

hematuria occurred in 7.9 per cent, a not infrequent occurrence. The incidence of hematuria with acute retrocecal appendicitis is great. Collins found it present in 83.9 per cent of his cases and we found it in 62 per cent of ours. This high incidence is due to the close proximity of the acutely inflamed organ to the ureter, causing secondary ureteritis.

TABLE 2.—*Causes of Death in Forty-Five Cases of Acute Suppurative Appendicitis*

Immediate Causes of Death—	
General peritonitis	18
General peritonitis with paralytic ileus	11
Septicemia	1
General peritonitis with gas gangrene	1
Remote Causes of Death—	
Postoperative pneumonia	13
Pulmonary embolus	1

When the surgeon is confronted with such a condition in a patient suspected of having acute appendicitis, what is he to do? Delay may be dangerous, yet he does not wish to remove a normal appendix. Certainly a quick and reasonably thorough investigation of the urinary tract should be made before any operative procedure is undertaken. Catheterized specimens should be examined to exclude any possible extraneous sources of contamination. If erythrocytes are still present, a plain roentgenogram of the urinary tract is the next step. If this reveals no calculi, he should then take stock of the situation. Often this amount of information, admittedly not thorough, but with the other laboratory data and the clinical picture, is enough to warrant an exploratory laparotomy. There are occasions, however, when the clinical picture is still indefinite, despite this additional information, and the next step is intravenous pyelographic study, to visualize the urinary tract and further to rule out any calculi, ureteral strictures, torsion or tumors. A final step, if time and conditions permit, is cystoscopic study and catheterization of the ureters.

Let us again call attention to the frequency of hematuria in cases of acute appendicitis, particularly if the appendix is retrocecal. We do not believe that a surgeon should relax his vigil when faced with hematuria and allow time to supply the answer. Appendicitis is exacting too high a mortality already. It is the surgeon's duty to conduct a prompt investigation of the urinary tract as thorough as the condition of the patient allows.

Experience of Others.—We do not feel proud of our mortality statistics, but we are not so chagrined when we compare them with others (table 3).

TREATMENT OF DIFFUSE APPENDICAL PERITONITIS

We do not feel it necessary or suitable in this paper to discuss all the details of treatment of appendicitis in general; instead we wish to convey the ideas of ourselves and others with regard to two features of the treatment of diffuse or general peritonitis secondary to acute suppurative appendicitis with rupture. No one form of treatment of this condition is practiced by all surgeons. From the literature we have found that a number of representative surgeons favor deferring any operation in a certain type of diffuse appendical peritonitis. Only a few cases fit into this category, but they are plentiful enough so that the matter should be presented.

A. *Deferred Operation.*—Coller and Potter[9] have expressed the belief that operation should be postponed until a propitious time in all cases in which the appendix has ruptured and peritonitis has developed to the extent of being generalized. If they first see the patient two or three days after peritonitis has begun and it has become diffuse, they are inclined, if the patient's condition will allow, to wait from six to eight weeks and to secure as great localization as possible before operating. Guerry[10] has stated the opinion that this plan applies more to late than to early diffuse peritonitis.

If this plan is followed, the well known 1892 Ochsner[11] method of treatment is employed. This is directed toward allowing the entire gastrointestinal tract as near complete rest as possible, plus the use of fluids parenterally administered, liberal amounts of opiates, Fowler's position and dry heat to the abdomen.

Again let us emphasize that comparatively few cases arise in which the question of deferred operation occurs.

Reid and his associates[12] have recommended and practiced the Ochsner treatment in certain cases, in the hope of lowering the mortality rate in this small group.

Guerry[10] compared two series. In the first, with immediate operation, the mortality rate was 10 per cent; in the second, in which operation was postponed, the rate was 1.4 per cent.

Coller and Potter[9] reported a series in which operation was deferred with a death rate of 9.4 per cent.

B. *Immediate Operation.*—Operation should not be deferred in cases of (1) acute simple appendicitis, (2) early suppurative appendicitis before generalized peritonitis has developed, (3) suppurative appendicitis with localized abscess, (4) general peritonitis associated with pregnancy and (5) doubtful diagnosis.

C. *Drainage vs. Nondrainage in Appendical Peritonitis.*—We recognize the fact that the policy of deferring operation applies to only a few cases of suppurative appendicitis and that the large majority of

TABLE 3.—*Mortality of Appendicitis*

Source	Type of Appendicitis	Mortality Rate, %
Reid and his associates[12]	Rupture with localized abscess	11.4
	Rupture with general peritonitis	33.9
Davis and his associates[4]	Acute gangrenous	8.02
	Acute, with rupture	25.5
McKenna[3]	Gangrenous with peritonitis	19.0
	Gangrenous with rupture	46.1
Hur, D. K.: Illinois M. J. **69**: 447 (May) 1936	Rupture with local peritonitis	10.0
	Rupture with diffuse peritonitis	18.5
Nuzum, T. W.: Wisconsin M. J. **35**: 109 (Feb.) 1936	Suppurative	7.5
Our Series		
First 1,000	Acute suppurative 9.5	
Second 1,000	Acute suppurative 23.3	
2,000 averaged	Acute suppurative	16.4

patients should be operated on without delay. The subject we wish to discuss here is when drainage should be used and when not used.

Drainage should be used in all cases of walled-off abscess formation. If the appendix is readily accessible it should be removed; if not, it should be left alone to avoid manipulation with resultant breaking of pro-

9. Coller, F. A., and Potter, E. B.: The Treatment of Peritonitis Associated with Appendicitis, J. A. M. A. **103**: 1753-1760 (Dec. 8) 1934.
10. Guerry, LeGrand: Mortality from Appendicitis, J. A. M. A. **107**: 1910 (Dec. 5) 1936.
11. Ochsner, A. J.: The Cause of Diffuse Peritonitis Complicating Appendicitis and Its Prevention, J. A. M. A. **36**: 1747 (June 22) 1901; abstr., Am. J. Surg. & Gynec. **15**: 84, 1902.
12. Reid, M. R.; Poer, D. H., and Merrell, Paul: Statistical Study of 2,921 Cases of Appendicitis, J. A. M. A. **106**: 665-669 (Feb. 19) 1936.

tective adhesions and spreading of infection; also, if the appendix is not removed, drainage should be used even though general peritonitis is present. However, if the appendix is removed, and even though general peritonitis is present with free fluid throughout the abdomen, and that fluid frank pus, drainage should not be employed. The objections to drainage in this condition are:

1. It is impossible to drain the entire abdominal cavity.
2. The material forming the drains stimulates the formation of additional adhesions between the abdominal organs and the peritoneal surfaces and increases the danger of intestinal obstruction and mechanical ileus.
3. A wide and weakened incision with its accompanying direct hernia is a frequent complication.
4. These developments prolong hospital stay and expense.
5. These factors definitely increase the mortality rate according to most surgeons.

In this connection Cafritz [13] quoted Marchini as reporting 285 cases in which drainage was used and 158 in which it was not. In the former group the death rate was 14 per cent and in the latter 5.6 per cent. Krasnoselskiy [14] reported 1,944 cases, with 17 per cent mortality in the drainage group and 1.5 per cent in the nondrainage group. In our own group only nineteen patients were treated by closure without drainage; there was but one death, and that from postoperative pneumonia. The other 171 patients had drainage, and forty-four died, a rate of 25.7 per cent. These figures seem significant, even though our series is small and not divided according to the presence or absence of localized abscess.

REMEDIES

A. *Education of the Public.*—It is probably too soon to estimate the results of the Philadelphia campaign, but it seems to us to be the one most efficient means of getting the public to cooperate by seeking early medical attention for abdominal pain. If economic conditions improve, this delay on the patient's part will be lessened, but in the meantime persons should be told to pocket their pride and seek medical aid regardless of their circumstances if they have pain in the abdomen. For this educational measure the great publicity mediums of newspapers, magazines, radios, public speeches and placards can well be used, as they are being employed now in the campaigns against cancer and syphilis. Especial attention must be placed on the danger of taking purgatives in the presence of abdominal pain.

B. *Education of the Physician.*—It seems trite to state that the physician should be told that with few exceptions appendicitis is a surgical disease. Rarely the patient has another disease that precludes operation, but modern surgery and modern methods of anesthesia make the operation in cases of early involvement so simple that a patient with advanced degenerative disease or serious infection can tolerate it with reasonable safety.

Early operation is another important factor. The mortality rate of chronic and uncomplicated acute appendicitis is so low that it is well worthwhile to remove the organ promptly and avoid the dangers of delay.

13. Cafritz, E. A.: Nondrainage of the Peritoneal Cavity in Appendical Peritonitis, J. A. M. A. **108**: 1315-1317 (April 17) 1937.
14. Krasnoselskiy, M. V.: Treatment of Appendical Peritonitis Without Drainage, Vestnik khir. **40**: 193, 1935; abstr., J. A. M. A. **105**: 2120 (Dec. 21) 1935.

SUMMARY

We have analyzed another thousand cases of chronic, acute simple and acute suppurative appendicitis in order of occurrence at Woman's Hospital and have found no great variations from the first thousand cases except a sharp increase in the mortality rate (9 per cent to 23 per cent) for the acute suppurative type.

We believe the increased mortality to be due to delay in operation and that in turn to (*a*) economic causes, (*b*) the tendency to use home remedies, including purgatives, for a protracted time and (*c*) complicating factors in diagnosis causing delay in operation.

In a few cases of suppurative appendicitis the operation should be deferred. In the greater number, however, surgical measures should be taken at once. A decrease in the mortality rate can be obtained by education of the public to avoid delay in seeking medical attention and by education of the physician to take prompt action when indicated.

BOWEL ANTIGEN

IV. THE CLINICAL USE OF A NEW METHOD TO DETERMINE THE PRESENCE OF THE VIRUS OF LYMPHOGRANULOMA VENEREUM IN THE DIFFERENTIAL DIAGNOSIS OF INTESTINAL INVOLVEMENTS

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I. EXPERIMENTAL AND CLINICAL BACKGROUND FOR THE CLINICAL USE OF BOWEL ANTIGEN [1]

Involvements of the intestine of known cause are those due to neoplasms, bacterial and parasitic infections, bacterial toxins associated with food poisoning, vitamin deficiencies and the excretion of poisonous chemicals. A decade ago lymphogranuloma venereum, now generally regarded as due to a virus, was associated with rectal stricture because of the frequent concomitant occurrence of the latter condition with a positive Frei reaction. More recently some authors have assumed that a positive Frei reaction associated with intestinal diseases indistinguishable pathologically and clinically from bowel disorders of diverse or unknown origin is indicative that this virus is the cause. This is true in many instances, but given a specific case it is not possible merely by means of the Frei reaction to establish such a connection. Even the clinical aspects and the pathologic picture of lymphogranuloma venereum are not pathognomonic.

The most that can be said is that a positive Frei reaction in association with a bowel disorder can suggest the possibility of viral origin. A positive Frei reaction is an allergic intracutaneous response to inactivated bubo pus containing the virus of lymphogranuloma venereum. It merely establishes the fact that the

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1. The term antigen strictly speaking is limited to substances known to engender antibodies when injected into the animal organism. "Bowel antigens" may or may not produce them; their composition is not completely known, but this term has been used because all bowel antigens are manipulated in much the same manner as other true antigens. Bowel antigen and associated terms have also been employed to avoid confusion by readily distinguishing the bowel antigen and its response from the Frei antigen and its reaction.

reacting subject is or has been infected at some time in his life with this virus. The Frei reaction will be positive even though this viral infection has ended as a simple bubo. The viral infection, active, inactive or terminated, resulting in a positive Frei reaction, may bear no relation to the intestinal involvement. A positive Frei reaction does not establish the presence of the virus in any involved tissue except in the bubo. Any other deduction is simply inferential attended by all the limitations of such reasoning. Indeed, not all patients infected with the virus of lymphogranuloma venereum, with or without concomitant intestinal disturbances, give positive Frei reactions.

Bowel antigen—a new, practical diagnostic aid—appears to offer a more direct and specific method of determining the presence of the virus in intestinal tissue and discharge, both ante and post mortem. Inactivated blood, mucus, pus and intestinal contents grossly free from feces compose what is known as a bowel discharge antigen. Bowel tissue free from fecal contamination, preferably fresh and unfixed, macerated and inactivated, makes up bowel tissue antigen. The preparation of the patient and the technic for the securing of material for use as bowel antigens, the preparation of the antigens, their intracutaneous inoculations into a minimum of three subjects known to have a positive reaction to the Frei antigen and into at least three controls, neither group manifesting any systemic disorder or organic gastrointestinal disease, and the interpretations of the reactions have been discussed in detail elsewhere.[2]

A positive reaction to bowel antigen parallels the positive response to Frei antigen inoculated simultaneously for purposes of comparison.

A positive bowel antigen (one producing positive reactions) indicates the presence of the virus in the tissue or in the discharge of the patient from whom the material was secured. A negative bowel tissue antigen prepared from actively involved tissue is more significant than a negative bowel discharge antigen, because in the latter the antigenic material may be too greatly diluted or lost as a result of dysentery. Neither type of negative antigen determines the absence of the virus as conclusively as a positive antigen indicates its presence.

The conclusion that a positive bowel antigen indicates the presence of the virus in the tissue or discharge of the patient from whom it was secured is based on analogy and experimental evidence, which also indicates its pathogenic significance.

A. *Analogy.*—A positive bowel antigen like the Frei antigen will produce positive responses in persons known to have been infected with the virus of lymphogranuloma venereum. The type of intradermal reaction, unlike any produced by known bacteria, toxins, foreign proteins or other allergens, and their interpretations are identical. Strains of both Frei and bowel antigens vary similarly in their antigenic qualities. Control subjects, free from systemic or organic gastrointestinal disease, give negative reactions to both types of antigens. Bowel antigens produce a negligible number of false positive reactions. This is striking when one considers their present crudity.

The only reference encountered to work of a similar nature is that of Nicolas, Favre, Lebeuf and Charpy,[3] who secured an antigen from the pus exuding from a fistula of a person with anorectal elephantiasis and a positive Frei reaction. In three persons with positive Frei reactions this antigen produced a positive response. No control work of any nature or details of technic and of interpretations are reported. A similar effort with material from a similar source was reported by Wien and Perlstein. The same criticism can be offered of their work.

B. *Experimental Evidence.*—1. Findlay[4] summarized the data to 1936 as follows:

> Ravaut, Levaditi, Lambling and Cachera (1932), and Laederich, Levaditi, Mamou and Beauchesne (1932), by an ingenious technic, isolated from inflamed rectal tissue [vegetation secured by biopsy] a virus which agreed in every way with the viruses isolated from cases of lymphogranuloma inguinale by Hellerström and Wassén (1930), Levaditi et al. (1931) and Findlay (1932). A similar virus isolated by Mocquot, Levaditi and Reinié (1935), from an inflammatory condition [vegetation secured by biopsy] of the colon, proved of considerable interest, for with this strain Levaditi, Mollaret and Reinié (1935) produced the histological changes characteristic of lymphogranuloma inguinale in the rectum of chimpanzees by direct inoculation into the mucosa, while in human volunteers they reproduced the primary penile sore with involvement of the inguinal glands—the lesions typical of lymphogranuloma inguinale. [The human subjects were negative to the Frei antigen prior to the inoculation and positive to it subsequently.] A green monkey Cercopithecus calli thrix was inoculated (Findlay, 1935) immediately anterior to the rectum, with a virus isolated in this country from the enlarged inguinal glands of a patient with genital lymphogranuloma inguinale and passed through mouse brains. Ten days after inoculation the monkey was killed and a swelling about the size of a hazelnut was found at the site of injection, while the mesenteric glands were swollen. From the inflamed tissues involving the rectal wall—which histologically were characteristic of lymphogranuloma inguinale—and from the mesenteric lymph nodes there was recovered a virus that produced meningitis in mice and resembled in all respects the virus of lymphogranuloma inguinale. There is thus little doubt that the same virus is responsible both for the genital lesions of lymphogranuloma inguinale and for the rectal lesions associated with certain cases of stricture.

2. A male dog was parenterally inoculated by me[5] with uninactivated bowel discharge from a patient from whom a positive bowel discharge antigen had been obtained. The dog's intradermal reactions to two active human Frei antigens were positive at fourteen days. Prior to administration of bowel discharge the animal gave a negative reaction to three active Frei antigens, one of which produced one of the two positive reactions referred to. A control antigen consisting of inactivated bubo pus of nonspecific origin from several human sources produced no reaction. This, it is believed, tends to establish further that the virus is present in material from which a positive bowel antigen is made, and the intradermal response is brought about by the virus or an associated product.

A stricture or vegetations with or without colitis have not been produced with this virus experimentally. The evidence to date seems to establish that the virus is present in vegetations and strictures associated with

2. Paulson, Moses: Intracutaneous Responses Comparable with Positive Frei Reactions with Colonic Exudate from Chronic Ulcerative Cases with Positive Frei Tests, Am. J. Digest. Dis. & Nutrition **3**: 667-673 (Nov.) 1936; A New Diagnostic Intradermal Reaction with Bowel Antigen Indicating the Presence of the Virus of Venereal Lymphogranuloma in the Intestine and Differentiating Colitis Associated with that Virus, J. A. M. A. **109**: 1880-1886 (Dec. 4) 1937; footnote 5.

3. Nicolas, J.; Favre, M.; Lebeuf, F., and Charpy, J.: Intradermoréactions positives dans la maladie de Nicolas-Favre (trois cas) avec une antigène tiré d'une forme anorectale éléphantiasique de la maladie, Bull. Soc. franç. de dermat. et syph. **39**: 24 (Jan.) 1932.

4. Findlay, G. M., in Discussion on the Etiology and Treatment of Fibrous Stricture of the Rectum (Including Lymphogranuloma Inguinale), Proc. Roy. Soc. Med. **29**: 1449 (Sept.) 1936.

5. Paulson, Moses: III. The Diagnosis of Colitis Associated with the Virus of Lymphogranuloma Venereum by Bowel Antigen, Am. J. Digest. Dis. & Nutrition **5**: 554-562 (Nov.) 1938.

rectal involvements in many persons with positive Frei reactions. It also shows that it is present in the bowel discharge as well as in bowel tissue, with or without stricture, elephantiasis or fistula. The evidence points out that this agent is identical with the virus encountered in the genital phase of lymphogranuloma venereum. The ability of the virus obtained from rectal vegetations to reproduce genital lymphogranuloma venereum in man, and inguinal adenopathy and meningoencephalitis in lower animals establishes its pathogenic propensities. In view of this and much striking clinical evidence, it seems reasonably safe to assume at this time that the presence of the virus in the intestine as indicated by a positive bowel antigen is of pathogenic significance. Bowel antigen seems now to have made possible the practical clinical application of the experimental data adduced heretofore.

II. THE APPLICATION AND SIGNIFICANCE OF BOWEL ANTIGEN IN CLINICAL PRACTICE

A. *Rectal Stricture.*—The colonic involvement commonly recognized as due to the virus of lymphogranuloma venereum is the advanced stage of the disease. It appears as a rectal stricture in a person with a positive Frei reaction, frequently with fistulas and anal and genital elephantiasis, often associated with ulceration and polyposis. This relatively easily recognized clinical picture is now no longer a diagnostic problem. The use of bowel antigen here would not seem essential; however, its use may be desirable for confirmation.

This clinical state, even in the absence of a positive Frei reaction, has been considered as due to this virus. The discrepancy is explained on the basis of anergy. It has been estimated by Frei that about 10 per cent of such cases manifest anergy. The actual extent of this phenomenon is not known, since not all rectal strictures and not all the so-called typical clinical states referred to are due to the virus of lymphogranuloma venereum. Also, the extent of anergy in the absence of this advanced stage or in states indistinguishable from those brought about by other agents has yet to be determined. At this writing the only direct method of establishing anergy in either of these typical or less typical conditions rests on the procuring of a positive bowel antigen.

The following cases of the typical or advanced bowel states usually associated with lymphogranuloma venereum but with negative Frei reactions are illustrative of the use and significance of bowel antigen:

CASE 1.—A white man, an American, aged 59, seen in 1937 because of rectal stricture and ulcerative colitis, in 1922 had had inguinal adenopathy on the right which was drained. In 1927 a stricture of the lower part of the rectum was discovered. In 1937, when the Frei antigen was first used on him, he gave a negative reaction to five active human strains.

Was the bubo due to the virus of lymphogranuloma venereum? Were the colitis and stricture, occurring five years after his bubo, due to this virus? Were they unrelated? Was this case one of anergy?

His bowel discharge antigen produced eight positive and five negative responses in thirteen patients with positive Frei reactions and twenty-three negative reactions in twenty-three patients with negative Frei reactions. Here bowel antigen indicated clearly that the problem—one of anergy—was associated with the virus of lymphogranuloma venereum.

CASE 2.—A white woman aged 48, seen in consultation by me in the diagnostic clinic of the Johns Hopkins Hospital for rectal pain and bleeding, five years previously had undergone excision of the left kidney presumably for relief of lithiasis. A sinus exuding pus persisted in the postoperative wound. The perineum and labia majora were "indurated and stony hard"; the vagina did not permit the insertion of a finger. The anus, through which only the tip of the small finger could be inserted, was strictured and fissured and discharged pus; a rectoscope with a two-eighths inch diameter could not be passed for more than 2 or 3 cm. The anogenital tissues were hypertrophied.

Both the gynecologist and I at first thought the problem to be one of lymphogranuloma venereum, for the clinical picture was highly suggestive. When the patient failed to react to five different strains of active human Frei antigen, the following questions arose: Was the case one of anergy? The sinus persisting after nephrectomy suggested tuberculosis. The Wassermann reaction of the blood was negative, and the patient had had no antisyphilitic therapy. Was the condition malignant? A biopsy specimen of anal tissue and a bowel discharge antigen were obtained. Injection into guinea-pigs of material from the nephrectomy wound produced no sign of tuberculosis. The bowel antigen gave negative results and the pathologist reported squamous cell carcinoma.

This case teaches that even the advanced clinical state said to be typical of lymphogranuloma venereum may be a manifestation of other conditions. As lymphogranuloma venereum is increasingly emphasized, there is danger of overlooking or forgetting other etiologic factors in clinically similar situations. Lymphogranuloma venereum, which in this instance at first seemed unmistakable, could not be established. While it is still possible that the virus may have borne some relation to this problem, experience with bowel antigen appears to make this possibility more remote.

Further Comment: The significance of bowel antigen is emphasized when these two illustrative cases and their implications are considered together. Both patients were white, one a man and the other a woman; both presented strictures; the man also had ulcerative colitis above the stricture; both failed to respond to multiple active human Frei antigens; both had the typical clinical picture of lymphogranuloma venereum, the man giving a history of the genital phase, the woman —as is often the case—having no knowledge of the earlier phases. Only by inference, by virtue of the so-called typical clinical picture, could it be assumed that the infection in each case was due to the virus of lymphogranuloma venereum. Even this inference was not particularly strong when the patients failed to respond to the Frei antigen. In the man, the presence of the virus was determined by obtaining a positive bowel antigen, not an inferential but a direct diagnostic procedure. The woman's antigen was negative and the problem was solved by the finding of squamous cell carcinoma. Bowel antigen provides a direct indication of the presence of intestinal venereal lymphogranuloma. It reduces the necessity for inference. What inference may lead to is exemplified specifically by the fact that for years every stricture of the rectum was regarded as due to syphilis because some persons with strictures had positive Wassermann reactions.

B. *Other Intestinal Conditions.*—Bowel antigen is of import in the differential diagnosis of intestinal disorders, particularly when the clinical manifestations appear to be at variance with the so-called typical clinical distal state of intestinal lymphogranuloma venereum already referred to. It is with such problems, now not generally recognized as possibly associated

with this virus, that bowel antigen should find its greatest usefulness, as indicated by the following cases:

1. Dysentery:

CASE 3.—*Ulcerative colitis with a negative Frei reaction.* A Negress aged 24, examined Dec. 22, 1937, because of rectal pain and bleeding on defecation, had noted a "lump in the right groin" on November 18. Gynecologic examination revealed bilateral inguinal adenopathy. There was no rectovaginal fistula or anogenital elephantiasis. Vaginal smears showed no gonococci. She failed to react to chancroidal vaccine and to multiple human Frei antigens as late as May 1938, and numerous attempts to aspirate pus from the buboes were unsuccessful. Rectosigmoidoscopic study revealed progressively severe colitis without mass or stricture, exuding blood and mucopus and extending from the anorectal margin 12 or 15 cm., the brunt of the involvement being within the first 5 cm. Bacteriologic, parasitologic, serologic and roentgenologic study gave no significant information.

My inability to ascribe this patient's inguinal adenopathy to lymphogranuloma venereum, her consistent failure to react to multiple human Frei antigens, the absence of an intestinal or genital picture suggestive of lymphogranuloma venereum and the lack of evidence suggesting any other etiologic agent resulted in the condition being designated nonspecific ulcerative colitis.

However, the bowel antigen obtained in this case gave six positive reactions in eleven patients with positive Frei reactions and no reactions in ten patients with negative Frei reactions. A positive discharge antigen from the generative tract was also secured. This will be the subject of a forthcoming publication.

Thus it was demonstrated with bowel antigen that this apparent nonspecific ulcerative colitis was actually associated with the virus of lymphogranuloma venereum. Anergy, in this case not clinically typical of lymphogranuloma venereum, could have been discovered only by this procedure.

Anergy, together with the failure to recognize the possible association of this virus with intestinal conditions different in appearance from those described as "typical," results in a reported frequency of viral infection lower than the probable true incidence. Bowel antigen should aid in such determination.

CASE 4.—*Ulcerative colitis with a positive Frei reaction.* A Negro aged 19 with a positive Frei reaction had typical, apparently indeterminate ulcerative colitis without stricture three years after a bubo involvement. Was the intestinal disorder unrelated to his venereal disease? The answer rests on the fact that ten of eleven patients with positive Frei reactions gave positive reactions to his bowel discharge antigen; eighteen with negative Frei reactions gave negative reactions to it; there were no false positive reactions.

Further Comment: What might be expected from the use of bowel antigen is again emphasized when the two foregoing cases are considered together. Both patients had had buboes; the man gave positive Frei reactions; the woman failed repeatedly to respond to multiple active strains of human Frei antigen. Both had apparent typical nonspecific ulcerative colitis. If inference were to establish the virus of lymphogranuloma venereum as the cause of ulcerative colitis because of a positive Frei reaction and a previous bubo in the case of the man, was inference also to result in the contrary conclusion for the woman when there was a bubo which might have been due to any one of several agents and no response to the Frei antigen? A positive bowel antigen from each solved the problem not by inference but by directly indicating the presence of the virus of lymphogranuloma venereum in the involved intestine. Clinically such a result might well be regarded as of etiologic significance.

Bowel antigen makes possible the detection of intestinal venereal lymphogranuloma before the clinical picture becomes advanced and typical, thus facilitating early therapy in the hope of avoiding the later, frequently incurable manifestations. The incidence of venereal lymphogranuloma in cases of so-called typical ulcerative colitis is as yet not known. Bowel antigen offers the only practical available means for its determination.

2. Inflammation of the Terminal Portion of the Ileum, Cecum and Ascending Colon with Positive Frei Reaction:

CASE 5.—A Negro aged 27 came to the hospital Oct. 28, 1937, because of a painful lump to the right of the umbilicus, which he had noted for the first time two days prior to admission. Two weeks earlier he experienced a generalized dull ache in the right upper part of the abdomen, which apparently had come on during the course of an evening and persisted until admission. There was daily defecation. No change in the consistency of the stools, no mucus, pus or bright red blood in the feces and no melena, nausea, vomiting, chills or urinary symptoms were encountered. The temperature was 100.2 F., the pulse rate 78, the respiratory rate 18, and the blood pressure 112/80. A movable tender mass, not attached to the liver, 2 inches to the right of the umbilicus was noted. Rectal examination including examination of the prostate gave negative results. The urine was normal, and the white blood cell count was 12,000. The tentative diagnosis was of "inflamed appendix causing inflammation and matting of a loop of the intestine, or a cecal mass either tuberculous or malignant."

In 1934 he was seen during intense abdominal pain and in mild shock. A perforated duodenal ulcer was closed. In 1930 he had had gonorrhea.

At operation it was difficult to decide whether the condition of the resected cecum, ascending colon and terminal portion of the ileum was inflammatory or malignant. The impression of the pathologist, who found a foreign body ("a piece of wood or a piece of peach or prune pit") embedded in the mass, was that the process was active nonspecific inflammation. It appeared not unlike that described for either regional ileitis or lymphogranuloma venereum. The results of subsequent efforts to clarify its causation with respect to tuberculosis and infection by the typhoid-paratyphoid-dysentery group of organisms were negative. The patient did not respond to Ducrey bacillus antigen. He gave a positive Frei reaction, but he stated that he had had no bubo involvement and there was no inguinal scarring.

The clinical manifestations and gross and microscopic study of tissue and other investigations offered no aid in ascertaining the cause. The positive Frei reaction merely suggested a possible association between the virus of lymphogranuloma venereum and the lesion. The bowel tissue antigen was negative in six cases of positive and in six of negative Frei reactions.

If the virus was the cause of such an active process, it was reasonable to expect its presence in the involved tissue and hence its manifestation by this method because of the relative ease with which I have secured positive tissue antigens from the rectum and sigmoid flexure. At any rate, this negative antigen casts further doubt on the inference that because the Frei test gave a positive result the virus of lymphogranuloma venereum was the causative agent.

Bowel tissue antigen and bowel discharge antigen should be employed in all cases of obscure intestinal disorders. When there is a positive Frei reaction, bowel antigen offers the only practical method to determine the connection between such a reaction and the cause of the lesion. Even when the Frei test is negative, the virus may be present in the lesion (anergy). Bowel antigen is the only available practical means by which the cause in these cases can be discovered.

III. SUMMARY

The evidence to date—experimental and clinical—supports the view that the virus of lymphogranuloma venereum in intestinal discharge or tissue is of pathogenic significance. The only direct clinical method now available to determine the presence of the virus in such sources is in the use of bowel antigen. When bowel antigen is positive it indicates the virus of lymphogranuloma venereum in the bowel tissue or discharge from which it is obtained.

Bowel antigen is important because:

1. The clinical picture is not pathognomonic. The so-called typical state of intestinal lymphogranuloma venereum is not always caused by this virus.

2. Some cases clinically indistinguishable from nonspecific ulcerative proctitis or colitis are found associated with the virus of lymphogranuloma venereum by means of bowel antigen.

3. The pathologic picture—grossly and histologically—is not pathognomonic. Bowel antigen may aid in differential diagnosis ante and post mortem.

4. The Frei antigen alone in differential diagnosis is inadequate because:

(*a*) The patient may give no reaction to Frei antigen, and bowel antigen may indicate virus presence (anergy).

(*b*) A positive Frei reaction may be produced by an antedated or healed virus infection or one unrelated to the bowel disturbance.

Medical Arts Building.

ALLERGIC MANIFESTATIONS WITH INJECTION TREATMENT OF VARICOSE VEINS

DEATH FOLLOWING AN INJECTION OF MONOETHANOLAMINE OLEATE (MONOLATE)

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Deaths resulting from injections given in the treatment of varicose veins fortunately have been very rare. Reports of death due to emboli have practically disappeared from the medical literature since the use of coagulant solutions has been given up and since the realization has become general that the patients during the course of their treatment must be kept ambulatory.

However, the hazard from the phenomena of allergy has not been eliminated and remains a real danger which must be borne in mind continuously by surgeons using injections in the treatment of varicose veins.

REACTIONS ACCORDING TO THE SOLUTION USED

The various sodium chloride or sugar solutions are not entirely free from this danger, as nitrogenous impurities may be contained in them. The resultant reactions of course should occur but rarely and be minor. That they do occur is borne out by Probestein's [1] report of a nitritoid reaction after the injection of a solution of invert sugar. In 1938 a case [2] was described in which dermatitis of the involved leg with a slight dermatitis on both arms and the sacral region developed after the second injection of the solution.

In addition to the typical evidences of salicylism which frequently follow the use of sodium salicylate for injecting varicose veins, Meisen [3] has noted urticaria following its use.

Quinine, when used as a solution of quinine and urethane, not infrequently causes urticaria or dermatitis, which may even develop into severe weeping eczema. Immediately after the injection of this solution into a patient sensitive to quinine a generalized urticaria may develop, associated with asthma so severe that the patient is unable to breathe until given a large dose of epinephrine hydrochloride. I know of no case in which this has been fatal but have never seen a case in which epinephrine was not given immediately.

Sodium morrhuate causes a variety of allergic reactions. This fact is not surprising, in that in the preparation of this solution it is impossible to remove all nitrogenous materials contained in the cod liver oil. In 1932 Ritchie [4] called attention to these reactions and described the following three types:

1. Erythematous or urticarial manifestations of the skin.

2. Gastrointestinal disturbances with abdominal pain and diarrhea appearing shortly after injection.

3. Collapse with cyanosis, pallor, low blood pressure and temporary loss of consciousness.

To cases of the first type I would add those in which in the course of treatment by injections of the sodium morrhuate solution an itching, thickened, red area appears in the skin over the veins injected some time previously. If the injections of this solution are stopped this rash disappears, but if the treatment is continued the condition spreads, soon becoming a fairly well generalized weeping eczema.

The second type described by Ritchie [4] is probably only a mild form of the third, which is of course a severe nitritoid reaction and, when sufficiently severe, may cause death. Levi [5] in 1938 called attention to the fact that deaths have followed the injection of sodium morrhuate. That death occurs oftener than the medical literature would indicate is evidenced by the fact that one physician from the medical examiner's office in New York City, as he has advised me, has seen three such deaths in the course of his duties, none of which have been reported in any medical magazine. These reactions, as is typical of the greater number of the severe reactions following the injection of sodium morrhuate, occurred with the first or second injection following at an interval after a previous series of injections of the same solution. Lewis [6] and Zimmermann [7] have described this type of sensitization phenomenon, but in patients who recovered from the resulting reactions.

On a number of occasions I have seen a similar but milder reaction following the patient's first injection of sodium morrhuate solution. It is impossible, of course, to prove that these less severe manifestations may not have been psychic.

1. Probestein, J. S.: Major Complications of Intravenous Therapy, J. Missouri M. A. **33**: 349-352 (Sept.) 1936.

2. Dermatitis from Invert Sugar for Varicose Vein Injections, Queries and Minor Notes, J. A. M. A. **110**: 1774 (May 21) 1938.

3. Meisen, Valdemar: Varicose Veins and Haemorrhoids and Their Treatment, New York, Oxford University Press, 1932.

4. Ritchie, Alison: Treatment of Varicose Veins During Pregnancy, abstr. Edinburgh M. J., November, 1933, pp. 157-164.

5. Levi, David: The Injection Treatment of Varicose Veins, in Rolleston, Humphry, and Moncrieff, A. A.: Practical Procedures, London, Eyre and Spottiswoode, 1938; reviewed in M. World, London **48**: 294 (April 22) 1938.

6. Lewis, K. M.: Anaphylaxis Due to Sodium Morrhuate, J. A. M. A. **107**: 1298 (Oct. 17) 1936.

7. Zimmermann, L. M.: Allergic-like Reactions from Sodium Morrhuate in Obliteration of Varicose Veins, J. A. M. A. **102**: 1216-1217 (April 14) 1934.

That cessation of treatment for a period is not necessary to the development of this allergic state is testified to by the case reported by Dale,[8] in which a severe nitritoid reaction followed the thirteenth in a series of injections spaced at regular intervals. Hatcher and Long[9] reported a case in which a reaction occurred in the course of the first series of injections and another when the treatment was resumed at a later date. The second reaction developed before the tourniquet was removed from the patient's leg. Both reactions were very severe but complete recovery ensued in about four hours.

For nearly two years monoethanolamine oleate (monolate) has been my solution of choice for varicose veins. This solution is made of a synthesized chemical and for this reason the possibility of its containing nitrogenous materials has theoretically been eliminated. Until the time of treatment in the case to be reported I had used this solution in the treatment of more than 200 patients and had seen no reactions of any kind following its use. I have continued to use it since and have observed no other reaction of any kind. The manufacturers have received no reports of reactions, with the exception of a few of a very mild nature. Meyer[10] observed no allergic manifestations following the use of monoethanolamine oleate in a small series of cases.

REPORT OF CASE

Miss A. S., a well developed and slightly obese white English woman aged 57, referred for treatment of varicose veins Jan. 17, 1936, had extensive varicosities of the great and small saphenous systems in both legs. She had had no previous treatment. Injections of from 3 to 5 cc. of 5 per cent solution of sodium morrhuate were given at intervals until August 10, thirteen injections having been given up to that time. There was no evidence of any type of reaction to these injections.

The condition of the legs was greatly improved, although a fair number of varicosities remained which had not been injected. However, she felt so greatly improved at that time that she did not return to the office until May 2, 1938.

A week previous to this time a superficial varicosity over the left tibia had ruptured, but the resulting hemorrhage had been readily controlled by pressure. Examination revealed a considerable number of new varicosities in addition to those which had not been treated in 1936. Many of the veins which had been previously injected could still be felt as firm fibrous cords.

Because of the interval since the use of sodium morrhuate, its use was considered to be contraindicated. May 2, 1938, 2 cc. of monoethanolamine oleate was injected into a vein in the left leg. There was no reaction and a satisfactory closure of the varicosity was obtained. May 9, 4 cc. was injected into another vein in the left leg, again with no reaction and an excellent closure.

May 16, 4 cc. was again injected into a vein in the left leg. There was no immediate reaction of any kind. As had been done after each previous injection, the leg was elevated to permit the solution to empty from the vein. The patient sat quietly for about ten minutes and then dressed. She walked about 50 feet to the front door of the office, when she felt somewhat faint. She walked back into the office and sat down in a chair, where she had a generalized convulsion, to all appearances typical of that seen in epilepsy. With it she lost consciousness. Her pulse and color were excellent. In about forty-five seconds the convulsion ceased; she became conscious and was able to talk. To all appearances she was completely recovered.

After about two minutes she said that she could not breathe and lost consciousness again, but without any convulsion or muscular spasm. She ceased breathing and within two or three minutes became pulseless. Epinephrine hydrochloride was given intravenously and then into the heart, without effect. Artificial respiration was maintained from the onset of the second episode in the reaction for about thirty minutes.

An autopsy performed by Dr. Philip Goldstein, acting assistant medical examiner, revealed nothing but visceral congestion. If the death was due to any cause other than the injected monoethanolamine oleate solution, no evidence of such circumstance could be found.

COMMENT

Apparently death in this case was due to an allergic reaction, although the clinical picture was not typical. The interval of about fifteen minutes before the onset of the convulsion, the convulsion without marked change in the pulse or the patient's color and the apparently complete recovery followed by failure of respiration and cardiac action without any appreciable response to intravenous and intracardiac injections of epinephrine, were certainly not the manifestations expected with a nitritoid reaction.

Of course, rarely an allergic reaction may be evidenced in the form of a convulsion. I have a patient now nearly 40 years of age who since childhood has had a convulsion with loss of consciousness whenever she eats cod fish and at no other time. Another patient, now 25 years of age, since childhood has had a typical grand mal convulsion with loss of consciousness whenever she eats chocolate, and at no other time.

In the present case sensitivity must have developed from the two previous injections of monoethanolamine oleate, although the previous injections of sodium morrhuate may have had some bearing on the development of the allergy, in that chemicals similar to those in monoethanolamine oleate are contained in the sodium morrhuate. Meyer[10] mentioned two patients, treated first with sodium morrhuate and then with monoethanolamine oleate without any allergic reaction, who had typical allergic reactions when injections of sodium morrhuate were resumed.

PREVENTION OR AVOIDANCE OF REACTIONS

The question of the prevention or avoidance of the reactions encountered in the course of treating varicose veins by injections is most difficult and no satisfactory answer is available at the present time.

Small test doses of the solution used may reveal a sensitivity present before treatment is started but do not point out what patients will become sensitive in the course of treatment.

Mild reactions of various types will in most cases serve to warn the surgeon that a different solution should be used. Watching for these minor reactions and using them as a danger signal will aid greatly in avoiding the development of the major reactions.

After an interval in a course of treatment, various surgeons have suggested the use of intradermal tests for sensitivity before the resumption of injections with the previously used solution. This procedure cannot be counted on to rule out all patients who will later have a severe reaction, as a full dose of the material given intravenously may cause no reaction whatever for one or more injections in the new series and then be followed by a severe reaction. I start with small amounts, from 0.25 to 0.5 cc., and gradually increase the amount until the desired dose is reached, but I do not feel that this will prevent or foretell a reaction later in the series of treatments.

The commonest time for severe reactions is on the resumption of treatment after a temporary cessation of

8. Dale, M. L.: Reaction Due to the Injection of Sodium Morrhuate, J. A. M. A. **108:** 718-719 (Feb. 27) 1937.
9. Hatcher, M. B., and Long, H. W.: Unfavorable Reaction from Sodium Morrhuate, J. M. A. Georgia **26:** 427-428 (Aug.) 1937.
10. Meyer, N. E.: Monoethanolamine Oleate: A New Chemical for the Obliteration of Varicose Veins, Am. J. Surg. **40:** 628-629 (June) 1938.

treatment with sodium morrhuate. Rather than to rely on the intradermal or intravenous tests for sensitization, it might be better in this circumstance always to use some other solution.

TREATMENT OF THE ALLERGIC REACTIONS TO SOLUTIONS USED FOR THE TREATMENT OF VARICOSE VEINS

For the milder types of reactions, whether they are cutaneous manifestations or minor generalized nitritoid reactions, cessation of the use of the causative drug is the only treatment required.

For the severe urticarial and asthmatic type of reaction, administration of 7, 15 or if necessary 30 minims (0.4, 1 or 2 cc.) of 1:1,000 solution of epinephrine hydrochloride will give prompt and complete relief.

For the severe generalized nitritoid reactions, epinephrine, dextrose and saline solutions given intravenously, caffeine, sodium benzoate and coramine with the application of external heat and, when necessary, artificial respiration will prevent death in nearly every case.

After any type of reaction the solution which caused that reaction should not be used for the same patient at any later time.

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IS NUTRITIONAL DEFICIENCY THE BASIS OF WERNICKE'S DISEASE?

REPORT OF CASE

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In 1881 Wernicke [1] described under the formidable title "encephalitis haemorrhagica superior" a disease affecting the nuclei of the nerves to the eye muscles which leads to death in a few days. The clinical signs consist of paralysis of the eye muscles, a reeling gait and disturbances of consciousness—a terminal somnolence which may or may not be preceded by a period of excitement. This syndrome has been found occasionally in association with Korsakoff's psychosis (Bonhoeffer [1]) and with polyneuritis. Tachycardia (unassociated with fever) is common, and disturbances of breathing are sometimes observed. There is an occasional report of recovery.

Perhaps the most typical anatomic feature of the disease [2] is the distribution of the lesions, which are largely limited to the gray structures near the third and fourth ventricles and the aqueduct. Sections of the brain reveal, even macroscopically, the presence of hemorrhagic areas in the mammillary bodies, posterior corpora quadrigemina and thalami. The chief histologic changes are intimal proliferation of the small blood vessels, necroses, which may be accompanied with hemorrhage, and marked glial proliferation. Because there is no true inflammation, Spatz [1] expressed preference for the designation pseudo-encephalitis.

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1. Cited by Bumke, Oswald, and Kant, F.: Rausch- und Genussgifte: Giftsuchten, in Bumke, Oswald, and Foerster, O.: Handbuch der Neurologie, Berlin, Julius Springer, 1936, vol. 13, pp. 828-915.

2. Wertham, Frederic, and Wertham, Florence: The Brain as an Organ, New York, The Macmillan Company, 1934.

Two of Wernicke's original three patients were alcoholic addicts who were admitted in delirium. The subsequent patients with this syndrome whose cases were to be reported (Jacobäus) were all alcoholic addicts. Indeed, chronic alcoholism has come to be considered the basis of the condition.[2]

It is therefore interesting to recall that in Wernicke's first case (cited by Jacobäus [3]) there was no associated alcoholism:

> The patient was a 20 year old seamstress who was dismissed from the Charité Jan. 6, 1877, after recovering from poisoning with sulfuric acid. Soon after she left the institution she started to vomit but otherwise remained well. However, from February 3 she was bedridden and strikingly sleepy; she yawned a great deal and reeled in walking. Her vision became impaired, and she suffered from dizziness and headache. February 11 there were some ptosis, impairment of external ocular movements and diminution of the pupillary light reflex. Moderate swelling of the optic disks and many retinal hemorrhages were observed. She became more sleepy and disoriented, sank into coma and died February 15. Necropsy revealed punctate hemorrhages in the vessel sheaths of the tissue lining the third ventricle, in the corpora quadrigemina and in the retinas.

In 1924 Tanaka [4] observed the same histologic picture in association with an unusual condition which has been interpreted in Japan as "intoxication from mother's milk." That Wernicke's disease is found associated not only with misuse of alcohol and other exogenous intoxications but also with so-called endogenous intoxications was shown by Neubürger,[5] who reported fourteen cases of the disease without alcoholism. He included ten cases of cancer, in seven of which the malignant growth was in the stomach. In most of Neubürger's cases vomiting and loss of weight were prominent signs.

Környey [6] reported two cases in which the clinical and the histologic pictures were of Wernicke's disease but there was again no associated alcoholism. In his first case a Korsakoff psychosis started twenty days after gastric resection for cancer. In the second instance persistent vomiting occurred with recurrent carcinoma of the cervix.

In 1937 Neubürger [7] reported three cases of chronic gastritis in elderly women with preterminal disturbance of consciousness and paralysis of the eye muscles. In these cases the anatomic lesions of Wernicke's disease were observed. It is noteworthy that in each instance the entire course of the disease was marked by striking and persistent vomiting. Neubürger considered intestinal autointoxication and nutritional deficiency in the etiology.

REPORT OF CASE

A white American woman, married, was examined in 1923. At that time fractional analysis after a test meal revealed 8 units of free hydrochloric acid in each of three specimens of gastric content. In 1929 there was no free hydrochloric acid in any of four specimens of gastric content after a test meal and x-ray examination of the stomach gave normal results. At this time cholecystectomy was performed.

She returned to the hospital at the age of 50, July 12, 1937, and said that for two years she had had indefinite irregular

3. Jacobäus, H.: Ueber einen Fall von Polioencephalitis haemorrhagica superior (Wernicke), Deutsche Ztschr. f. Nervenh. **5**: 334-350 (July 19) 1894.

4. Tanaka, Toshiwo, cited by the Werthams.[2]

5. Neubürger, Karl: Ueber die nichtalkoholische Wernickesche Krankheit, insbesondere über ihr Vorkommen beim Krebsleiden, Virchows Arch. f. path. Anat. **298**: 68-86 (Nov.) 1936.

6. Környey, S.: Wernicke-Korsakow-Prozess als Komplikation bösartiger extraneuraler Geschwülste, Deutsche Ztschr. f. Nervenh. **144**: 241-260 (Oct. 25) 1937.

7. Neubürger, Karl: Wernickesche Krankheit bei chronischer Gastritis: Ein Beitrag zu den Beziehungen zwischen Magen und Gehirn, Ztschr. f. d. ges. Neurol. u. Psychiat. **160**: 208-225 (Oct.) 1937.

distress and pain in the upper right quadrant of the abdomen, together with eructations. Three months before registration, at the time of an automobile accident, she had been unconscious for a short period but had suffered neither fracture nor gross trauma. Since then she had been very nervous and the attacks of severe abdominal pain had occurred more frequently. Headache had been present for six weeks and daily vomiting for five weeks before registration.

Except for some tenderness in the right side of the abdomen and a pulse rate of 120 beats a minute, general physical examination, including ophthalmoscopic examination, gave negative results. The temperature was 98.4 F. The urinalysis and routine examinations of the blood gave essentially normal results (the hemoglobin content was 12.6 Gm. per hundred cubic centimeters, the erythrocytes numbered 4,160,000 and the leukocytes varied from 5,300 to 17,500 per cubic millimeter). There was no free hydrochloric acid in the gastric content. X-ray examinations of the chest, head and abdomen showed no abnormality. Examination of the blood for bromides gave negative results. The basal metabolic rate was +12 per cent. The blood urea content was 18 mg. per hundred cubic centimeters, the carbon dioxide combining power was 46.7 volumes per cent, and the serum sulfates amounted to 3.3 mg. and the serum bilirubin to 1.1 mg. per hundred cubic centimeters. The bromsulphalein liver function test showed maximal retention of the dye. The sedimentation rate was 62 mm. an hour. A careful examination of the central nervous system gave negative results objectively. However, the history suggested an anxiety state of several years' standing.

The patient's course in the hospital was marked by continual vomiting of the regurgitant type, which required the parenteral administration of salt solution and dextrose almost daily. Her pulse rate continued to vary between 110 and 120 beats a minute, even though her temperature remained normal and there was no evidence of hyperthyroidism. Although there was some tenderness in the right side of the abdomen, the leukocyte count was repeatedly normal. The determination of serum bilirubin was repeated and the content found to be 1.2 mg. per hundred cubic centimeters; the serum yielded an indirect van den Bergh reaction. Occasionally the patient became restless, slightly agitated and depressed because of her failure to improve. The ophthalmoscopic examination was repeated by Dr. H. P. Wagener and again reported as giving negative results. Some observers felt a mass in the right side of the abdomen.

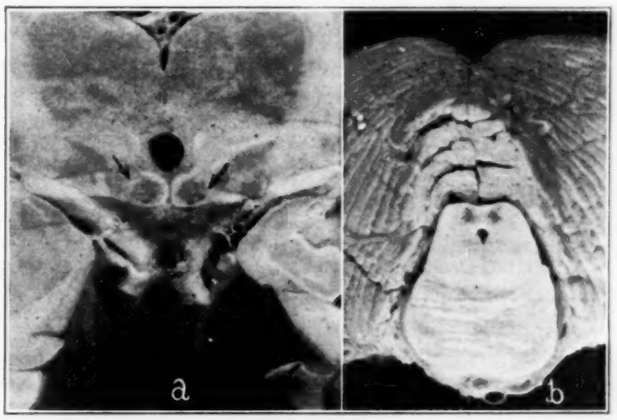
July 24 exploratory laparotomy, performed under regional anesthesia, revealed a loop of ileum which had become adherent to the site of the former right rectus incision. The pylorus and the first portion of the duodenum were adherent to the liver at the bed of the gallbladder. The rest of the exploration showed no abnormality and the adhesions were freed.

The first five days of the postoperative course were marked by much less vomiting than had occurred previously. The patient took about 2 liters of fluid a day by mouth. However, the afebrile tachycardia persisted.

July 29 the vomiting recurred and minimal fever (temperature, 99 F.) appeared. The fever recurred daily in the late afternoon and gradually increased. The pulse rate varied between 110 and 140 beats a minute. August 6 mental confusion and restlessness with continual movements of the lower limbs were observed. There was some loss of visual acuity. External ocular movements were limited in all directions, and the deep tendon reflexes were generally diminished to a slight degree. No other abnormality was found on neurologic examination, but the patient could not cooperate for a sensory examination. Dr. H. P. Wagener repeated the examination of the fundus and found a number of large hemorrhages in each retina around the margins of the optic disk and toward the macula. He found no definite edema of the optic disks. He considered the recent reduction of vision retrobulbar in origin and the entire picture suggestive of a deficiency of vitamins B and C. The blood urea amounted to 26 mg. and the blood chloride to 627 mg. per hundred cubic centimeters, the carbon dioxide combining power was 68 volumes per cent and the calcium content was 9.4 mg. per hundred cubic centimeters. Preparations of vitamin B, vitamin C and liver extract were administered intramuscularly, and parenteral injection of a solution of salt and dextrose was continued.

August 7 the spinal fluid was found to be clear and colorless. The pressure was 8 cm. of water and the protein content 45 mg. per hundred cubic centimeters. The Kolmer, Kline and colloidal gold tests were negative. There were 2 small lymphocytes per cubic millimeter. The patient's temperature ascended to 105 F. and the pulse rate to 170 beats a minute. Although the patient was comatose and breathing irregularly, her pupils reacted normally. The calves were tender. The tendon reflexes were diminished in the arms and absent in the legs. These observations were considered evidence of multiple peripheral neuritis. The parenteral administration of vitamins was continued, and a transfusion of 500 cc. of blood was given. August 8 the patient was moribund in coma. There was twitching of the facial muscles. Tenderness of the nerve trunks and of the calves was still present. The temperature remained high until death occurred August 9.

Necropsy was performed two hours after death. The brain weighed 1,080 Gm. and there was minimal atrophy of the cerebral convolutions. Petechial hemorrhages were present in the mammillary bodies (*a* in the illustration) and in the posterior corpora quadrigemina (*b*). Otherwise the brain, spinal cord and brachial and lumbosacral plexuses were normal macroscopically. There were also petechial hemorrhages in the skin over the arms and chest and in the lungs, as well as atrophy of the liver (which weighed 1,085 Gm.) and of the gastric and intestinal mucous membranes.



a, Frontal section at the level of the mammillary bodies, showing minute hemorrhages; *b*, transverse section of the inferior corpora quadrigemina, showing minute hemorrhages in the roof of the midbrain. (The lesions in the nuclei of the trochlear nerves are microscopic and are found below the aqueduct.)

Microscopic study of many areas of the brain and spinal cord revealed definite changes only in the mammillary bodies, posterior corpora quadrigemina and infundibulum. In these areas there were proliferative changes of the endothelial cells of the small vessels (marked by mitotic figures), considerable interstitial edema and small round hemorrhages, usually perivascular. The nerve cells were well preserved except in the nuclei of the nerves to the eye muscles, where there was advanced chromatolysis, and in the thalamus, where chromatolysis with satellitosis was present. In an occasional peripheral nerve (for example, from the brachial plexus) there was an area of demyelination, which contained scavenger cells. These areas represented noninflammatory degeneration.

The microscopic sections of the stomach, duodenum, jejunum and ileum revealed the mucosa to be only from a third to a half as thick as normal; thus the macroscopic impression of atrophy of the gastrointestinal mucosa was confirmed. There were moderate fatty change and slight passive congestion but no central necrosis in the liver. The microscopic picture was confirmed by Dr. J. W. Kernohan.

COMMENT

As a result of loss of essential secretions or of food, this patient undoubtedly suffered from a deficiency state which was exacerbated by the chronic atrophy of the gastrointestinal mucous membrane.[8] It is likely

8. Wilbur, D. L., and Snell, A. M.: Deficiency States Associated with Gastro-Intestinal Disease, Am. J. Digest. Dis. & Nutrition **4**: 720-728 (Jan.) 1938.

that the retention of dye and the fatty change in the liver resulted from a vitamin deficiency.[9] The persistently rapid heart rate in the absence of fever or hyperthyroidism is common in cases of vitamin B deficiency.[10] The relation of the retinal hemorrhages to a deficiency in nutrition and particularly to a deficiency in vitamins has been amply demonstrated.[11] Furthermore, the patient presented all the clinical and anatomic characteristics of Wernicke's disease. Finally, the lesions of Wernicke's disease are said to have been produced experimentally by the administration of a diet deficient in vitamins.[12] It is suggested that a deficiency of nutrition, probably of vitamins, underlies Wernicke's disease in all cases. Large doses of vitamins B and C have effected a cure of this condition in some of our cases.

SYPHILIS

WITH SPECIAL REFERENCE TO THE INCIDENCE IN RELATIONSHIP TO AGE GROUPS AND STATUS OF THERAPY AT THE DATE OF INFECTION

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The recent prevalence of syphilis as claimed by the propaganda arising from the United States Public Health Service was outright astounding to me. During twenty-four years of endeavor as a medical student and worker in laboratory medicine, in the course of which time thousands of postmortem examinations, examinations of surgical specimens and serum tests for syphilis were both accomplished personally and personally directed, I have witnessed syphilis in four sections of the country dwindle from a common experience with full blown active lesions to an occasional positive serologic test, a few scars of the aorta, a rare scarred liver presumably syphilitic, a slightly more frequent syphilis scarred central nervous system, and about twice a year an actual case of congenital syphilis.

I had not insisted on a routine serologic test for syphilis because syphilis rarely was evident at postmortem and surgical specimen examinations, in the run of clinical cases, in serologic tests on prospective donors for blood transfusions, in cases in which a test happened to be made on available excess serum obtained for other purposes, and in tests done on actual syphilis suspects. The fear naturally arose that even though I thought that I had given due consideration to syphilis I may not have been thorough enough and that many cases had escaped notice because routine tests were not made.

I have therefore felt obligated to find a way to check more accurately the standard of medical practice in Milwaukee with particular reference to syphilis, in the interest of establishing a base line so that a determination might be made of what really has been accomplished in the quiet, inexpensive, determined, unobtrusive way characteristic of the dignity of the best medical practice, and what has been left for the more vigorous programs recently inaugurated to accomplish.

The objective of fair sampling requires cognizance and avoidance of pitfalls commonly inherent in statistics. Swivel chair statistics, in which the percentage of syphilis was based on the number of positive serologic tests without possession of information as to the number of individuals and consequences of the lesions represented, were eliminated. The subjects were observed in a manner which did not overemphasize the prevalence of syphilis. The figures should represent recent transmission of syphilis and not be burdened by cases in which infection may have been acquired even before the discovery of the spirochete, the advent of arsenical and bismuth treatments, and the application of serologic tests for syphilis. I believe that the plan adopted has adequately eliminated all such sources of error.

I was fortunate in having the Milwaukee Children's Hospital patients as the source of the serums. Children up to 12 years of age are cared for at the institution. Mothers with recently acquired, not adequately treated, syphilis should transfer the disease to their offspring in a high percentage of cases. The study, therefore, should be not only an index of congenital syphilis but an index of syphilis sufficiently active to be hazardous to the public in the parents of the group represented. All samples of blood were taken and tested by the laboratory personnel. All records were maintained within the laboratory. A rapid exclusion test, too delicate for diagnosis, was used to exclude negative cases. All serums of positive nature, regardless of degree, were subjected to two or more additional serologic tests at Columbia Hospital and the serologic laboratory of the Wisconsin Psychiatric Institute at Madison. All patients entering the outdoor department or hospital with the exception of a few private patients were tested. In the advent of a positive serologic test for syphilis, the entire family was investigated as far as this was possible. The cases of syphilis encountered in a family study could not rightfully be included in the statistical figure of current incidence of syphilis, since they were not seen in the regular run of cases. Only the initial case in the family was included in the statistics. The rigidly controlled plan has eliminated all possibility of the rather common practice of sending in a number of serums on the same patient under various names after obtaining a positive test. The hospital has no syphilis clinic to distort the figures of incidence. The hospital is a charitable institution and cares primarily for the children of the poor and low income families of Milwaukee. As far as there is anything to the fact that the low income group obtains inadequate medical care, the figures are probably too high. Facilities were not available to compensate for this error.

The incidence of syphilis in persons under 12 years of age indicated in table 1 would place the number of children who most likely have syphilis at 369 of Milwaukee's 123,000 children. Of these, forty have the untoward anatomic stigmas of syphilis, eighty have skeletal changes which may be determined radiologically, while 289 have only a positive serologic test to support the diagnosis of syphilis.

There were two instances in which both parents were negative to the serologic tests. The parents of one of the children had a history of syphilis, the mother

9. Snell, A. M.: Personal communication to the authors.
10. Weiss, Soma, and Wilkins, R. W.: The Nature of the Cardiovascular Disturbances in Vitamin Deficiency States, Tr. A. Am. Physicians **51**: 341-373, 1936.
11. Wagener, H. P., and Weir, J. F.: Ocular Lesions Associated with Postoperative and Gestational Nutritional Deficiency, Am. J. Ophth. **20**: 253-259 (March) 1937.
12. Alexander, Leo; Myerson, Abraham, and Pijoan, Michel: Beri-Beri and Scurvy: An Experimental Study, Tr. Am. Neurol. A., Program of the Sixty-Fourth Annual Meeting, May 2-4, 1938, pp. 25-26.

From the Milwaukee Children's and Columbia hospitals.

received antisyphilitic treatment during the final months of the gestation, and arsenic determinations on the hair indicated that the hair of the infant contained slightly more arsenic than that of the mother. At the time of the study, both parents and child had negative serums, but the child had x-ray evidence of skeletal syphilis. The parents in the second case had no history of syphilis, and the four other children had negative serums. It is not my purpose here to discuss the requirements for an accurate diagnosis of syphilis. Whether one likes it or detests it, a positive serologic test for syphilis is usually taken as a signal to turn on the spigots of antisyphilitic therapy. When one views the marked divergence between positive tests and morphologic evidences of syphilis as studied clinically, radiologically and at the postmortem table, thorough medical men must often wonder whether we do not have too implicit faith in a positive serologic test for syphilis. Certainly a child with only a positive test, with parents and four other children negative in all particulars, should raise the question of the requirements of an accurate diagnosis and proper therapeutic regimen.

If the expenditure of getting in touch with the patient, obtaining the blood, performing the test, recording the information and disseminating the information to proper authorities is fixed at $1.50 per test, it costs $712.50 in Milwaukee to make a positive serologic diagnosis of syphilis in children by the routine test method.

Assuming that the mothers who transmitted syphilis to their offspring represent the clinically active cases of syphilis and that the usual spread of three positive serologic tests to one clinically active case prevails, the incidence of probable syphilis in this 35 year age group would be 1.2 per cent. As donors for blood transfusions for their children, 210 mothers presented themselves in a routine manner. Three of these had positive Kline tests, an incidence of 1.4 per cent. The average incidence from the two sources of information would be 1.3 per cent. This would represent the adequacy of medical practice of about ten years ago if we put the average age at 25 for acquired syphilis.

TABLE 1.—*Clinical, Serologic and Radiologic Data on Children and Parents Studied*

Number of serologic tests	3,800
Number of children studied	3,018
Children with positive tests	8
Number recognized clinically	1
Number diagnosed by x-ray examination	2
Percentage indicated serologically	0.27
Percentage indicated clinically	0.03
Percentage indicated radiologically	0.06
Percentage indicated by one or more methods	0.3
Number of parent suspects available for test	13
Number of parent suspects positive serologically	8
Percentage of available parents positive	61
One or other parent positive	5
Percentage of one or other parent positive	70
Both parents negative	2
Number of other children in suspected families available for test	9
Number positive	2
Percentage of mothers with syphilitic activity sufficient to transmit syphilis during a full period of gestation	0.3

The clinical information on the doubtful case in table 2 was that of an anemic, very ill child with a positive Kline test. Neither parent had a history of syphilis or a history of treatment, and both had negative serums. Postmortem examination added a chronic pancreatitis, but the spirochete could not be demonstrated in the pancreas, liver or adrenals by the various staining methods. Consequently, this case remains very much in doubt.

The ages of the patients in table 3 who showed evidences of syphilis varied between 46 and 76. The average age was 60. If the likelihood is assumed that these patients acquired their syphilis at the average age of 25, the management of their disease will represent the medical practice of 1903, a date which antedates the discovery of the spirochete, the Wassermann reaction or important antisyphilitic treatment other than mercury.

TABLE 2.—*Postmortem and Surgical Specimen Examinations for Syphilis on Children Under Twelve from Sept. 1, 1935, to Jan. 1, 1939*

Surgical specimens examined.. 383	Syphilis diagnosed.. none
Postmortem examinations made 221	Syphilis diagnosed.. 1 doubtful case

TABLE 3.—*Postmortem and Surgical Specimen Examinations for Syphilis on Adult Patients Between Jan. 1, 1936, and Jan. 1, 1939*

Surgical specimens examined.. 4,012	Syphilis diagnosed..... 1
Postmortem examinations made 178	Syphilis diagnosed..... 8

Even here in only one of the eight cases did syphilis operate as the major cause of death. In fact, this patient was the only one who presented a progressive syphilitic lesion: a meningovascular syphilis with occlusion of a vessel in the pons. Two patients were somewhat disabled by aneurysms of moderate size. Two patients had evidence of old quiescent tabes, one of whom was included in the aforementioned aneurysms. Another disabling scar was a syphilitic periostitis. The final patient had quiescent gummatous scars of the liver and a syphilitic cirrhosis. In two bodies, small aortic scars were found at postmortem examination. In one body, even though forewarned of a positive serologic reaction, I was unable to find a lesion of syphilis at postmortem examination. Fortunately for the patients and with no hazard to the public, six of the patients were not under active treatment. The lesions of syphilis in these cases were at an irreducible residuum. The patient with the syphilitic periostitis may still receive some benefit from treatment. One patient was inadvertently injured seriously by the treatment. Active treatment of the patient with the meningovascular syphilis most likely would have averted death. Six of the nine would have benefited by treatment before the disabling lesions developed. It seems self evident that when these elderly persons who contracted their syphilis from thirty to forty years ago drop out of the picture there will be an appreciable spontaneous drop in the incidence of syphilis.

Eight patients of the 178 in the 60 year average age group had either scars of syphilis or a positive Wassermann reaction. Five of these had clinically recognized syphilis. This would indicate that, in 3 per cent of the population of Milwaukee in this age group, evidence of active or latent syphilis could be identified on careful physical examinations. If we calculate those who have demonstrable syphilis and those who have only positive serologic tests on the basis of the usual spread of a

recognizable clinical case to three with positive serologic tests, the incidence in this age group would be 12 per cent.

The protean manifestations of syphilis are summed up well in the old dictum "To know syphilis is to know medicine." We must bear in mind that this dictum has inherent the proposition that a person who has a positive serologic test may be actually or concurrently suffering from any of the other diseases which may be interpreted as syphilis because of a positive serologic test. Experience at postmortem examination has taught me that, if the brain, cardiovascular system, liver, hematopoietic organs or kidney are vulnerable or actually diseased, the consequences of antisyphilitic treatment are too often grave. Antisyphilitic treatment is therefore not to be undertaken lightly. It should be an individual problem undertaken only under the most intimate medical supervision. The social consequences of the patient's disease, how much the patient is likely to benefit from the treatment, and actual disease and functional status of the organs named should all be taken into consideration. Close observation for inadvertent consequences is also imperative. An accurate diagnosis of syphilis is here assumed.

This actual study of syphilis was made at Iowa City, Boston, Iowa City, Washington, D. C., and Milwaukee in order of service. The study represents the period between 1916 and the present. In order of decreasing incidence of syphilis, the arrangement is Washington, Iowa City, Boston and Milwaukee. The factors responsible for the situation in a given locality seemed to be the alertness of the profession, the adequacy of consideration for care of the indigent, and the cooperation of the patient. The importance of the alertness of the medical profession, which is always coupled with willingness to serve, has been outstanding. It should be pointed out that the District of Columbia is largely dependent on the federal government for appropriations for the care of the indigent. Curiously enough, here is also the home of the United States Public Health Service.

SUMMARY AND CONCLUSIONS

1. Syphilis was studied in the various age groups in Milwaukee with special reference to incidence and the consequences of the disease as well as the relationship of the incidence to the development of means for recognition and treatment of the condition.

2. Dependence was placed on routine admissions, presentation of parents for blood transfusions, and postmortem examinations for reliable sampling of the public in the study.

3. The high incidence of syphilis which prevails in the age group who acquired their syphilis before the advent of the discovery of the spirochete, the development of important arsenic and bismuth preparations and the knowledge of the serologic tests indicates that the groundwork has been laid for an imminent spontaneous fall in the incidence of syphilis.

4. The incidence of syphilis varies from one locality to another, depending on the alertness of the profession, the cooperation of the patient and provisions for the care of the indigent named in the order of their importance.

5. There can be no intelligent discussion of syphilis on the basis of the number of serologic tests per thousand of population. The least information for an intelligent discussion would appear to be the number of individuals represented by the tests per given area, the personal and the economic consequences of the disease, what the therapy has to offer the individual, and the functional and anatomic integrity of the body resulting from causes other than syphilis and the inadvertent serious consequences of the treatment.

6. In the postmortem examinations made, in all but one the morbid anatomy of syphilis was at an irreducible residuum.

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PAROVARIAN CYSTS COMPLICATING PREGNANCY

REPORT OF CASE CAUSING DYSTOCIA: REVIEW OF LITERATURE

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Dystocia caused by a parovarian cyst is of rare occurrence. A review of the literature since 1873 shows only sixty-two [1] reports of parovarian cysts complicating all stages of pregnancy and in only seven cases did the cyst produce dystocia. This paper includes a summary of all the cases complicating pregnancy that have been reported since 1873. No such analysis has been made previously. The study was prompted by a recent case in which a parovarian cyst produced a pelvic block and required aspiration of the cyst to permit delivery of the fetus.

Ovarian cysts and solid tumors, such as myomas, may also cause pelvic block and dystocia. The solid tumors can usually be differentiated from cysts, but the differential diagnosis of ovarian from parovarian cysts is often impossible during pregnancy and labor. Vozza [2] in a review from his own clinic of 108 cases of cysts complicating pregnancy found that twenty-seven cases (24 per cent) were of parovarian origin, twenty-nine cases (26 per cent) were dermoids and in fifty-two cases the cyst originated in one or the other ovary, being bilateral in 4.5 per cent.

EMBRYOLOGY

The parovarium represents a remanent of the sexual portion of the wolffian body in the female and is a homologue of the epididymis in the male. It lies in the connective tissue of the broad ligament near the fallopian tube and consists of a main collecting channel, running close and parallel with the tube, together with from ten to eighteen small perpendicular ducts projecting toward the hilus of the ovary. Cystic dilatations of the blind end of the main channel are frequent and produce the hydatids of Morgagni, which have no clinical significance. Parovarian cysts, which

From the Le Mars Clinic.
Dr. Jeannette D. Throckmorton of the Iowa State Medical Library prepared our bibliography and aided in securing the case reports from her own and the Surgeon General's Library, and Drs. Pohle and Carnazzo of Le Mars translated the French and Italian reports.

1. After this paper had been prepared, Dr. Throckmorton accidentally found the following report of a case which is not listed in any of the indexes: A tertipara in premature (?) labor presented a mass the size of a fist in the culdesac; torsion and gangrene were present. Cesarean section was performed and a cyst was removed from the broad ligament on the left side. The mother recovered, but no mention was made of the fetus. The patient had complained of constipation during pregnancy and severe pain in the left iliac quadrant after the fifth month (Johnstone: Broad Ligament Cyst with Twisted Pedicle Which Obstructed Labor: Specimen, Tr. Edinburgh Obst. Soc. **85**: 25, 1925-1926; Edinburgh M. J. **33**: 25-26 [Feb.] 1926).

2. Vozza, F.: Evolution of Ovarian and Parovarian Tumors During Different Periods of Pregnancy: Brief Report of 109 Clinical Cases, Ann. di ostet. e ginec. **54**: 889-1073 (July 31) 1932.

TABLE 1.—*Summary of Twenty-Six Cases of Parovarian Cysts Complicating Pregnancy Reported by Vozza* [2]

Case	Previous Pregnancies	Month of Pregnancy	Condition Found	Complications	Intervention	Maternal Results	Progress of Pregnancy	Observations
1	None	4th	Left cyst; 8 liters	None	Cyst emptied and removed	Cure	Normal course	Rapid growth of cyst with onset of pregnancy
2	One	2d	Left cyst, size large orange	Torsion of pedicle; intracystic hemorrhage	Removal	Cure	Normal course	No symptoms; accidental finding of tumor by patient; rapid growth during pregnancy
3	Four, three abortions	3d	Pedunculated right cyst size of fetal head at term	None	Removal	Cure	Normal course	Uterus retroverted; pernicious vomiting ceased after removal of cyst
4	None	3d	Right cyst; 3 liters seropurulent fluid	Suppuration; few pericystic adhesions	Removal	Cure	Aborted 5th postoperative day	Acute onset of fever; pain; diagnosis of cyst with torsion
5	Two	2d	Right cyst; 2 liters fluid	Torsion of pedicle, intracystic hemorrhage	Removal of cyst with adenoma	Cure	Normal course	Asymptomatic torsion, cyst anterior to uterus; displaced posteriorly
6	None	4th	Left cyst size of 7 month fetal head	None	Removal of cyst deep in pelvis posterior to uterus	Cure	Normal course	Severe constipation
7	None	8th	Right cyst, suppurating, size of fetal head at term	Suppuration of cyst in puerperium	Sac emptied and marsupialized	Cure	Spontaneous delivery of infant; died 2 days later	Pregnancy normal save for premature labor in 8th month
8	Three	Puerperium	Multiple cysts size of 8 month pregnancy	None	Removal 7th day of puerperium	Cure	Spontaneous premature labor	No disturbance in spite of size of abdomen; labor 8th month; forceps
9	Two	3d	Left cyst; 7 liters watery fluid	None	Removal following aspiration	Cure	Normal course	Cyst present prior to pregnancy; rapid growth with pregnancy
10	One abortion	2d	Right cyst; very thin wall	Torsion of pedicle, adhesions	Removal	Cure	Normal course	Torsion probable before pregnancy; tumor in left lower quadrant
11	None	Puerperium	Right cyst; 3 liters, hemorrhage and necrosis of wall	Torsion	Aspiration followed by removal	Cure	Operation in puerperium	Normal delivery; returned because of large abdomen
12	None	3d	Right cyst size of 8 month fetal head	None	Removal	Cure	Normal course	No developments
13	None	3d	Cyst size of orange	None	Removal	Cure	Normal course	Accidental finding of tumor by patient
14	None	2d	Cyst with two compartments	None	Removal, correction of retroflexion	Cure	Abortion 6th postoperative day	Preexisting threatened abortion
15	None	2d	Left cyst size of orange	None	Removal	Cure	Normal course	No disturbance
16	None	4th	Left cyst size of 7 month fetal head	None	Removal	Cure	Normal course	Some abdominal pain
17	Two, one abortion	3d	Size of fetal head at term	None	Removal	Cure	Normal	No subjective symptoms
18	One, one abortion	1st	Left cyst size of full term pregnancy	None	Removal	Cure	Normal	Spotting of blood after missing one menstruation
19	One, one abortion	2d	Left cyst; 7 liters of fluid	None	Removal after aspiration	Cure	Normal	Rapid growth during pregnancy
20	One	Term	Left cyst size of fetal head at term	None	Cesarean removal of cyst	Cure	Living baby	No important symptoms
21	One	3d	Left cyst size of 7 month pregnancy	None	Aspiration and removal of cyst	Cure	Normal	Rapid growth during pregnancy
22	None	Term	Left cyst size of fetal head at term	None	Cesarean removal of cyst	Cure	Live baby	Symptoms of abdominal pain
23	Three	2d	Left cyst size of adult head, cyst of right ovary	None	Removal of cyst and ovary, correct retroflexion	Cure	Abortion 8th day	Cyst accidentally found on examination
24	Two	2d	Right cyst size of fist	None	Removal	Cure	Normal	Cyst found on routine examination
25	One	2d	Left cyst size of fetal head	Torsion	Removal	Cure	Normal	Obstinate vomiting
26	None	3d	Right cyst size of orange	None	Removal	Cure	Normal	Rapid growth during pregnancy

were first mentioned by Velpeau in 1825, are regarded as resulting from retention of abnormal secretions of the epithelial lining of the parovarium.

PATHOLOGY

Parovarian cysts are usually single and unilocular and may be of any size. Rutherford [3] reports one case in which there were three cysts ranging in size from that of a pigeon egg to that of a duck egg. The cysts are always extraperitoneal or intraligamentary, and the tube lies stretched out over the superior surface of the cyst. A pedicle is not common but one may develop if the cyst grows intra-abdominally; the peritoneal layers of the broad ligament, the tube, the utero-ovarian ligament and even the ovary may be contained in the pedicle. A pedicle was present in seventeen of the sixty-two cases studied in this report.

3. Rutherford, R.: Abortion with Broad Ligament Cysts and Bacillus Welchii Infection, Brit. M. J. **1**: 173 (Jan. 22) 1938.

The cysts are usually pearly gray or pink with thin walls, with the peritoneal layers of the broad ligament freely movable over them owing to their subserous location. The inner surface of the cyst is smooth and glistening, but low papillae may be seen. The fluid is clear and serous and faintly alkaline and contains practically no mucin or pseudomucin. The fluid may be turbid, owing to degeneration and the presence of blood; it is innocuous and suppuration is rare. Dermoid cysts may be found in the broad ligament.[4] Ehrenberg [5] has recently reported an extraperitoneal epidermoid cyst containing sebaceous material producing dystocia at term.

Microscopically the cyst wall is made up of connective tissue with some smooth muscle and elastic tissue and is lined with a single layer of ciliated epithelium. Malignant change is very rare. Surrounding the cyst is the connective tissue of the broad ligament and within it are the blood vessels of the cyst, which are separate from those of the peritoneum.

CLINICAL

The clinical signs and symptoms depend on the location and size of the cyst. They grow slowly and are usually incarcerated in the broad ligament, thus displacing the uterus and causing more pressure on the blood vessels, nerves and ureters than ovarian cysts. They are rarely a factor in sterility, since the ovaries are normal. During pregnancy the enlarging uterus is

4. Cases 1 to 14 inclusive in table 1.
5. Ehrenberg, C. J.: Epidermoid Cyst Causing Dystocia: Case, Journal-Lancet **58**: 149 (March) 1938.

TABLE 2.—*Summary of Cases of Parovarian Cysts Complicating Pregnancy Reported by Other Authors*

Case	Author	Previous Pregnancies	Month of Pregnancy	Condition Found	Complications	Intervention	Maternal Results	Progress of Pregnancy	Observations
27	Trillat, P.: Broad Ligament, Parovarian Cyst as Cause of Dystocia in 3 Consecutive Pregnancies: Case, Bull. Soc. d'obst. et de gynéc. **22**: 429-430 (May) 1933	None	Term	Cyst in culdesac	None	Vagina aspirated	Cure	Normal	Three successive pregnancies aspirated at term; operation refused
		One	Term	Cyst in culdesac	None	Vagina aspirated	Cure	Normal	
		Two	Term	Cyst in culdesac	None	Vagina aspirated	Cure	Normal	
28	Michel, G., and Vermelin, H.: Parovarian Cyst with Torsion of Fallopian Tube in Ninth Month of Pregnancy: Case, Bull. Soc. d'obst. et de gynéc. **17**: 159 (Feb.) 1928	None	9th	Right cyst size of orange	Acute torsion	Removal of cyst	Cure	Normal	No symptoms previous to torsion
29	Davidson [7]	Five	In labor at term	Cyst in culdesac size of grapefruit	None	Cesarean, cyst not removed	Cure	Normal	Head displaced out of pelvis
30	Hammond, L. J.: Broad Ligament Cyst of Large Size Occurring During the Course of Pregnancy: Its Removal Five Weeks After Delivery, Am. M. **10**, 1903	One	Entire pregnancy	Right cyst out of pelvis	None	Removal during puerperium	Cure	Normal	Cyst grew to large size during pregnancy
31	Kahn, M.: Removal of Ovarian Cyst, Broad Ligament Cyst and Appendix at the Second Month of Pregnancy; Delivery at Term, Am. M. **2**: 108, 1901	No data	2d	Small cysts	None	Removal	Cure	Normal	No symptoms
32	Wilson, K. M.: Ovarian and Parovarian Cysts in Pregnancy, Am. J. Obst. & Gynec. **34**: 977 (Dec.) 1937	No data	7th	No data	None	Removal	Cure	Normal	
33		No data	3d	No data	Torsion	Removal	Cure	Normal	
34		No data	2d	No data	Torsion	Removal	Cure	Normal	
35		No data	7 wks.	No data	Torsion	Removal	Cure	Normal	
36		No data	No data	Cyst in abdomen	None	Removal	Cure	Normal	
37	Zimmerman, B. F.: Large Intraligamentous Cyst Complicating Pregnancy: Operation, Recovery, Internat. Clin. **30**: 202-204, 1920	2d	During pregnancy	Abdominal location	None	Aspirated 10 days post partum; 14 liters	Cure	Normal	Cyst removed 1 month after delivery
38	Spencer, Herbert: Tumors Complicating Pregnancy, Labor and the Puerperium, Lancet **1**: 411-418 (Feb. 21), 475-481 (Feb. 28), 529-535 (March 6) 1920	One	Diagnosis before pregnancy	Left cyst	None	Removal postpartum, 4 liters	Cure	Normal	Slow growth during pregnancy
39		One	3d	Right cyst 9 by 6 cm.	None	Removal	Cure	Normal	No symptoms
40		Two	3d	Right cyst size of emu's egg	Torsion	Removal	Cure	Aborted	
41		No data	No data	Right cyst 6 by 5 cm.	None	Removal 4 mo. after labor	Cure	Normal	Difficult forceps
42		No data	No data	Right cyst size of two fists	None	Removal after delivery	Cure	Normal	Forceps, version
43	Grosse, A.: Voluminex kyste du ligament large et grossesse; ablation du kyste; continuation de la grossesse, Gaz. méd. de Nantes, **31**: 948-950, 1913	None	6th	Left above uterus	Acute torsion	Removal 6th month, 8 liters	Cure	Normal	
44	Vanverts, M. J.: Torsion of Cyst of Broad Ligament During Pregnancy, Bull. Soc. d'obst. et de gynéc. **15**: 580 (Nov.) 1926	Five	6 wks.	Right cyst size of pea	Torsion	Removal of cyst, tube and ovary	Cure	Normal	Cyst in right ovary
45	Michel, G., and Guibal, J.: Broad Ligament-Torsion of Parovarian Cyst During Postpartum Period; Operation, recovery, Bull. Soc. d'obst. et de gynéc. **17**: 159 (Feb.) 1928	No data	No data	Left cyst size of orange	Acute torsion	Removal of cyst and tube 15 days post partum	Cure	Normal	Torsion 15 days post partum
46	Fruhinsholz, A., and Hamant, A.: A propos de quelques kystes ovariques de la gestation, Bull. Soc. d'obst. et de gynéc. **17**: 160-163 (Feb.) 1928	None	3d	Culdesac displacing uterus	None	Aspiration of liter	Cure	Normal	
47	Nash, W. G.: Torsion of Parovarian Cyst During Pregnancy, Proc. Roy. Soc. Med., London, 1908-1909; II. Obst. and Gynec. Sect. 224	None	3d	Left and posterior to uterus	Torsion	Removal, size of cocoanut	Cure	Normal	
48	Kreutzmann, H. J.: A Case of Extraperitoneal Intraligamentous Dermoid Cyst and Pregnancy, California State J. Med. **12**: 194 (May) 1914	One	4th	Left and posterior to dermoid cyst	None	Removal	Cure	Normal	

TABLE 2.—*Summary of Cases of Parovarian Cysts Complicating Pregnancy Reported by Other Authors—Continued*

Case	Author	Previous Pregnancies	Month of Pregnancy	Condition Found	Complications	Intervention	Maternal Results	Progress of Pregnancy	Observations
49	Lund, F. B.: A Case of Parovarian Cyst with a Twist of the Pedicle Occurring During the Fourth Month of Pregnancy: Operation, Recovery, Normal Delivery at Term, Boston M. & S. J., 1900, pp.143-208	Two	4th	Right cyst in culdesac	None	Removal, size of 3 month pregnancy	Cure	Normal	
50	Toogood, F. S.: Case of Pregnancy Complicated with a Parovarian Cyst Simulating Extra-Uterine Gestation, Brit. M. J. **1**: 1144, 1896; Lancet **1**: 1351, 1896	None	4th	Culdesac displacing uterus	None	Removal, size of cocoanut	Cure	Normal	
51	Bohm, I.: Unusually Large Parovarian Cyst Complicating Pregnancy, Gyógyászat. **70**: 223-224 (March 23) 1930	No data	4th	Abdomen enlarged, ascites	None	Removal	Cure	Aborted	Offensive vaginal discharge
52	Ehrenberg [5]	None	9th	Retrorectal mass displacing head	None	Aspiration of sebaceous material	Cure	Normal	Epidermoid cyst; low forceps
53	Manzi, L.: Cisti ovarica interligementoca incuneata nel bacino, ostacolante il parto: Minnaccia di rottura di inserta, tagliocesareo demolitore, guarigione, Rassegna d'obst. e. ginec. **37**: 434-442 (July 21) 1928	None	9th in labor	Mass in culdesac displacing head, uterine rupture impending	None	Cesarean, hysterectomy, removal of cyst	Cure	Normal	Premature separation of placenta
54	Qui, M.: Grossesses compliquees, l'une de kyste du parov. l'autre de kyste de l'ovaire, Rev. prat. d'obst. et de pediat. 289-295, 1911	Three	5th	Abdominal and pelvic tumor, 10 liters	None	Removal after aspiration	Cure	Normal	
55	Hartman, H.: Kyste du ligament large a pedicule tordu et grossesse; opération à 2 mois: guérison: accouchment à terme, Ann. de gynéc. et d'obst. Paris **69**: 453-456, 1903	None	2d	Right cyst in culdesac	None	Removal, 1 liter of fluid	Cure	Normal	
56	Lantuejoul and Reglade: Rupture spontanée d'un kyste du parovarie pendant la grossesse, Gynécologie **23**: 540, 1924	Three	6th	Right cyst	None	Removal 5 months post partum	Cure	Normal	Cyst disappeared during pregnancy; no symptoms; spontaneous rupture
57	Begouin and Lafargue: Kyste du parovaire et grossesse; opération, Bull. Soc. d'obst. et de gynéc. **12**: 88, 1923	Two	4th	Pedunculated mass near navel, uterus retroflexed and fixed	None	Removal, size of two fists, uterus replaced	Cure	Aborted	
58	Pery and Mamge: Kyste du parovaire et retroflexion de l'utérus gravide, Bull. Soc. d'obst. et de gynéc. **12**: 231, 1923	None	Before pregnancy	Large cyst in abdomen and pelvis	None	Removal 3d month of pregnancy	Cure	Normal	
59	Rutherford [5]	Three	2d	Sepsis, vaginal bleeding, tender in left lower quadrant	Torsion	Removal of 3 cysts, pigeon to duck egg size	Cure	Aborted	Mother developed B. welchii peritonitis and pelvic abscess
60	Huter, E.: Grossesse et tumor kystique intraligamentaire, Bull. Soc. d'obst. et de gynéc. **10**: 369-371, 1921	One	Before pregnancy and again in 6th month	Cyst on right above uterus size of man's head	None	Removal of pedunculated cyst at 7th month	Cure	Normal	
61	Reeb, M.: Dystocia provoqué par un kyste intraligamentaire suppuré de l'ovaire; césarienne, extirpationdé l'utérus et du kyste: Guérison, Bull. Soc. d'obst. et de gynéc. **10**: 444, 1921	None	Term, in labor	Cyst on left and in culdesac size of fetal head	Dystocia	Cesarean, suppurating cyst, ruptured in removal, hysterectomy	Cure	.....	Viable child; no symptoms during pregnancy
62	Downing and O'Toole.....	Three	Term, in labor	Mass in culdesac displacing head; uterine rupture impending	None	Aspiration per vagina, 350 cc.; spontaneous delivery	Cure	.....	No disturbance of pregnancy; cyst removed 10 days post partum, 500 cc.

usually forced up and out of the pelvis to the side opposite that of the cyst. Pain in the back or sides and bladder symptoms are common. At term the cyst may cause dystocia first by causing an abnormal presentation, second by acting as an insuperable obstacle to the passage of the fetus through the pelvis, and third by producing a rupture of the uterus. A pedunculated cyst may be located in any position in the abdomen and not cause symptoms, being only accidentally discovered by the patient or her physician.

COMPLICATIONS

Torsion and gangrene of parovarian cysts are common in pregnancy when the cyst has a pedicle, and several such cases [6] have been reported. Gangrene may also result from prolonged pressure during labor. Torsion may develop at any period, but it is most common in the early months of pregnancy and in the puerperium. Torsion was a complication necessitating operation in fifteen of the sixty-two cases reported. Rupture of the cyst may occur as a result of compression by the uterus and fetal head or of degenerative changes in the cyst wall. Intracystic hemorrhage and suppuration are other less common complications. Premature separation of the normally implanted placenta has been reported in a case of parovarian cyst.

6. Cases 2, 9, and 11 in table 1.

DIAGNOSIS

The differential diagnosis of parovarian from ovarian cysts during pregnancy is usually not possible, and the treatment is in general the same. Occasionally the parovarian cyst and the ovary can be felt separately and thus differentiated. Parovarian cysts are usually lower in the pelvis and are more fixed than those of ovarian nature. A tense cyst and a fibroid softened by pregnancy may at times be difficult to differentiate.

THERAPY

The indications for treatment of cysts encountered during pregnancy vary with the period of pregnancy and the size and location of the cyst. If a diagnosis of parovarian cyst is made in a patient seen during the first half of pregnancy, the cyst should be removed as early as possible if it is large, particularly if it is situated low in the pelvis and is not movable. If it is small, the patient may be kept under close observation and if it does not enlarge its removal may be postponed until after the termination of the pregnancy. Torsion of the cyst, however, may occur at any stage of pregnancy and necessitate an immediate operation.

During the second half of pregnancy the cyst, if large and fixed in the pelvis, should be removed at once; if small and not incarcerated, the patient may be watched closely and operation may be delayed at least until the fetus becomes viable. A study of the sixty-two cases in this report indicates that in the majority of patients the cyst enlarges, often rapidly, during pregnancy.

If a parovarian cyst is not diagnosed until labor is imminent or in progress, several procedures are possible: First, an attempt should not be made to do a forceful delivery alongside the cyst if it is large and prevents the fetal head from entering the pelvis. Second, reposition of the cyst under anesthesia with the patient in the Trendelenburg position may be attempted. If the cyst originates in the broad ligament with no pedicle this will rarely be possible, but it may be successful if it is of ovarian origin. Third, if the cyst is incarcerated in the pelvis it may be aspirated through the posterior vaginal wall, a blunt needle being introduced close to the posterior edge of the cervix in the median line. Davidson [7] reports a case in which he was able to palpate the uterine vessels on the vaginal aspect of the cyst. During the puerperium the cyst should be removed by laparotomy, since the flabby cyst is apt to undergo torsion if it has a pedicle. In suitable cases in which aspiration is not advisable because of the danger of injuring the vessels or ureter or because of the inaccessibility of the cyst, a cesarean section should be performed, followed by extirpation of the cyst when the condition of the patient permits. A few authors advise against treatment by aspiration, but that procedure is much safer than section in most hands and it seems to us that it is the method of choice when the cyst is incarcerated below the uterus. The removal of the cyst following cesarean section is often difficult if it is deep in the broad ligament or if an inflammatory reaction is present. In an occasional case in which infection of the cyst or uterus is present, a total hysterectomy is indicated following the cesarean section.

Judging from the results obtained in the cases reported, abortion or premature labor rarely results from laparotomy and removal of the parovarian cyst, even when torsion necessitates an immediate operation. The most favorable period during pregnancy for intervention seems to be the fourth month. Complications, such as torsion, hemorrhage, suppuration or rupture, developing in cysts during pregnancy call for immediate operation, no matter what the period of pregnancy or puerperium.

7. Davidson, A.: A Case of Dystocia Due to Cyst of Broad Ligament, J. Obst. & Gynaec. Brit Emp. **42**: 569-571 (June) 1935.

REPORT OF CASE

Mrs. G. M. aged 28, a quartipara, was referred to the Sacred Heart Hospital Dec. 2, 1937, by her physician, Dr. Charles Ihle of Cleghorn. Her past history revealed no serious illnesses and no operations. Her menses began at 13 years and were normal. The patient's first labor occurred in 1930; the labor was long and difficult and a stillbirth resulted. Her second labor in 1932 was normal. During her third pregnancy her blood pressure was elevated, being 170 systolic and 90 diastolic, but no toxemia developed. Her third labor, in December 1934, was normal. Following the third labor her blood pressure remained elevated and a valvular heart disease was first noted.

Her last menses before her fourth pregnancy occurred Feb. 23, 1937. During the pregnancy she felt weak and tired and had frequent headaches. There was no albuminuria or edema, but her blood pressure was 180 systolic, 100 diastolic. She had no unusual abdominal or pelvic symptoms. December 1 the patient complained of a severe headache with vertigo and blurred vision, and the following day she consulted her physician, who found that her blood pressure was 210 systolic, 110 diastolic, the urine containing four plus albumin. She was sent to the hospital at once.

On admission her temperature was normal and her pulse 120; she complained of severe headache and blurred vision. No edema was present. The heart was moderately enlarged and a double murmur was present. The urine was loaded with albumin and the hemoglobin content was 56 per cent. She was given magnesium sulfate by mouth and hypodermically; pentobarbital was given at frequent intervals and fluids were forced. Free evacuation resulted. The following day there was no improvement and her blood pressure was 220 systolic, 120 diastolic. One ounce (30 cc.) of castor oil was given and was followed by 16 grains (1 Gm.) of quinine in divided doses. Labor began in a few hours and the membranes ruptured at 7 o'clock the following morning.

Examination one hour later showed the fetal head high and to the right above the symphysis. Strong uterine contractions were felt. The cervix was very high up beneath the bladder and one had to displace the posterior vaginal wall to locate the cervix, which was partially dilated and effaced. The posterior vaginal wall was pushed anteriorly by a firm fluctuant mass which compressed the rectum and displaced the fetal head high to the right and out of the pelvis. On rectal examination a cystic mass was felt in the culdesac between the rectal and vaginal walls. The patient's pains were regular and strong but the labor progressed slowly. The blood pressure was 220 systolic, 140 diastolic. She was kept drowsy by pentobarbital sodium and at 11:30 occurred her first and only convulsion, which was quite severe. Magnesium sulfate and morphine were given hypodermically. By 1 p. m. dilatation and effacement were complete. The head was felt above the symphysis through the thinned out lower uterine segment and at each contraction it felt as if the lower uterine segment would rupture.

Dr. Roy Crowder, an obstetrician of Sioux City, then saw the patient in consultation. Under light ether anesthesia a large needle on a syringe was introduced into the cystic mass through the posterior vaginal wall near the cervix in the median line. Two hundred and fifty cc. of clear fluid under pressure was removed. The head rapidly engaged and the needle had to be withdrawn to permit delivery, which was abrupt and spontaneous. The baby was a male and weighed 8 pounds (3,630 Gm.). It was in good condition but had an incomplete harelip. The third stage of labor was normal.

The patient's postpartum period was normal. She had no convulsions or headache, her pulse was 80 and her blood pressure came down to 170 systolic, 100 diastolic. There was no abdominal pain or tenderness. On the ninth day the hemoglobin

was 65 per cent and the red cells numbered 3,400,000. No mass was felt on abdominal or rectal examination. A laparotomy was performed on the tenth day through a left paramedian incision. A small blood clot was lying free over the dome of the bladder and a few soft fibrinous adhesions were present between the left broad ligament and the culdesac. A soft flabby cyst 8 cm. in diameter was present in the left broad ligament, the peritoneal layers of the broad ligament being freely movable over the cyst. The left tube was elongated and stretched out over the superior surface of the cyst. The ovaries and right tube were normal. The left tube and cyst were removed by splitting the peritoneal layers of the broad ligament. The cyst had no pedicle and but little blood supply. The appendix, which was grossly normal, was removed. When the cyst was filled to capacity it held 500 cc. and was 12 cm. in diameter. The wall of the cyst was thick and the inner surface smooth.

After the operation there was no vomiting or distention and little pain, and convalescence was uneventful. The patient was dismissed from the hospital on the eleventh postoperative day. Two months later when the baby's lip was repaired she was feeling well. Her blood pressure was 180 systolic, 90 diastolic, the hemoglobin content was 80 per cent, red cells numbered 4,000,000, and the urine was free of albumin.

SUMMARY

Among the sixty-two cases of parovarian cysts complicating pregnancy that are analyzed from the literature, complications necessitating emergency operations occurred in sixteen cases. A cyst incarcerated in the pelvis caused dystocia in seven cases.

Parovarian cysts usually grow rapidly during pregnancy. They may be incarcerated in the pelvis or (as in seventeen cases) have a pedicle and be movable and be in any position in relation to the uterus. The fourth month of pregnancy is the most favorable period for intervention. Torsion is a common complication of pregnancy. Postoperative abortion after laparotomy is not common.

Parovarian cysts diagnosed in the first half of pregnancy should as a rule be removed because of their tendency to enlarge rapidly and of the possibility of complications such as torsion. In the latter half of pregnancy, early removal is indicated unless the cyst is abdominal. When dystocia results from an incarcerated cyst, aspiration of the cyst by way of the vagina when possible and delivery of the fetus by the vaginal route is the procedure of choice. When aspiration is not feasible, cesarean section and removal of the cyst then or later is indicated. No maternal deaths occurred in the sixty-two cases reported.

The Power to Think Consecutively.—In his daily work a practicing physician has little or no control over the questions presented to his mind; mainly diagnostic, they are brought to him for solution one after another in great profusion. His solutions are reached in by far the greater number of instances by no process of logical reasoning, but on the basis of previous experience or on the basis of what we call intuition, a faculty often remarkably developed. Inevitably his mental activities are chiefly of this kind. The questions are not only profuse, but diverse; the mind is jerked forcibly from one question to another. When problems relating to the mechanism of disease present themselves, as they inevitably do to the more active minds and in the earlier years, then, before a clear line of thought can be established or followed to a satisfactory conclusion, the mind is torn from its problem to be confronted with others. The practice of medicine from its very nature is destructive to consecutive thought; its continued practice weakens the very power to think consecutively, and therefore clearly, on problems relating to the nature of disease, a matter very vital to progress.—Lewis, Sir Thomas: Research in Medicine and other Addresses, London, H. K. Lewis & Co., Ltd., 1939.

THE AFTER-TREATMENT OF COLLES FRACTURE

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Functional recovery is the yardstick by which success in the treatment of any injury to a bone or a joint is measured. In fractures of the shafts of long bones a moderate deviation of bony alinement may be compatible with a good functional result. A fracture of the shaft of the humerus which has united solidly may be consistent with a good functional recovery even in the presence both of shortening and of loss of alinement. As a general rule, however, the closer the fracture line approaches the articulating end of the bone, the more important it becomes to secure good reduction of the deformity. In certain fractures, complete restoration of function cannot be obtained unless a nearly anatomic reduction of the fragments has been achieved. Colles fracture belongs to the latter group.

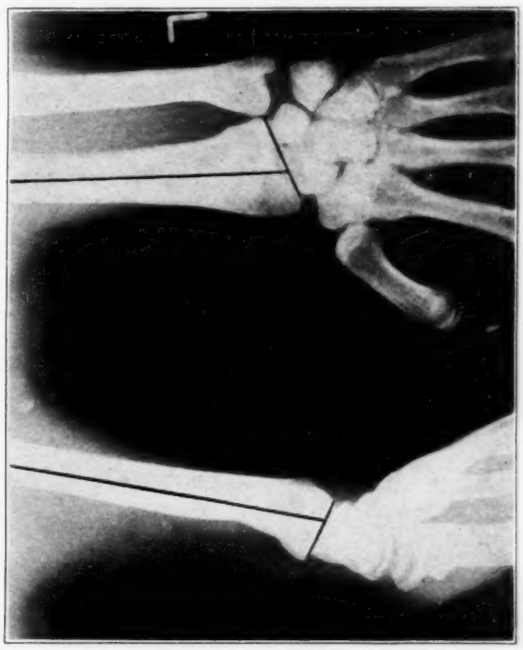

Fig. 1.—Normal wrist joint marked to indicate the forward and inward inclination of the articular surface of the radius.

Examination of a roentgenogram of a normal wrist joint (fig. 1) will reveal, among other things, that (1) in the anteroposterior view the concave articular surface of the radius faces inward at an angle of about 25 degrees; (2) in the lateral view the articular surface of the radius faces downward toward the palm at an angle of about 15 degrees, and (3) the styloid process of the radius extends distally beyond that of the ulna.

Unless reduction of a fracture satisfactorily restores these normal relationships there will be only a partial functional recovery with some persistent limitation of flexion or extension at the wrist, a persistent radial deviation of the hand and perhaps even a limited and painful rotation at the radio-ulnar joint.

A satisfactory result following Colles fracture means a complete restoration, within a reasonable time, of muscle power and motion in the hand, wrist, forearm and elbow and in the upper arm and shoulder as well.

Read before the Surgical Section of the New York Academy of Medicine, May 6, 1938.

It means free, coordinated movements of the fingers and thumb, activated by strong and supple muscles in the forearm, but it also includes a flexible elbow and shoulder which permit easy elevation of the extended arm above the head. What is meant by a reasonable time? The period naturally varies with the type of fracture and the age and condition of the patient, but in the average adult, with a fracture of average severity,

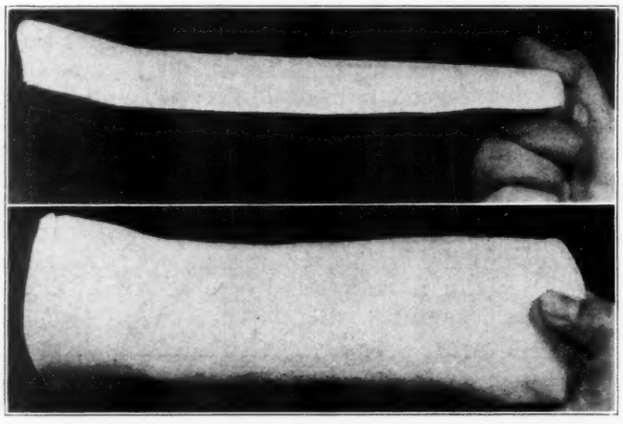

Fig. 2.—Dorsal plaster splint as seen from the side and from above.

it should not exceed seven or eight weeks. If one assumes that the fracture has been satisfactorily reduced, then the rehabilitation of the patient within the specified time depends entirely on the method of fixation of the fracture and on the after-care.

Colles fracture has been the subject of a great deal of experimentation in the matter of fixation and after-care. The invention of the plaster of paris bandage almost a hundred years ago was followed by a period during which massive heavy casts were applied to limbs. A fracture about the wrist meant the encasement of the whole arm, from the fingertips to the shoulder, in a cast which sometimes immobilized the patient as well as the wrist. On removal of the cast some months later it was the general rule to find a rigid hand, a withered arm and a deformity of a fracture which had not been reduced in the first place.

About fifty years ago, in an effort to prevent the horrible atrophy of bone and soft tissues that followed prolonged immobilization in heavy casts, Lucas-Championnière introduced early massage and early motion in the treatment of all fractures. His results were so superior to those obtained by previous methods that his practices received considerably wide acceptance within a few years. He deserves more credit perhaps than any one else for having emphasized the importance of functional recovery after injury to the bone.

The widespread use of physical therapy during and since the World War has been directly in line with the recognition of the importance of early restoration of function. The hand, wrist and forearm, because of their economic importance, have naturally become favored sites for the use of all physical therapeutic agents. These have included radiant heat, diathermy, early passive movement, early massage, electrical stimulation and ultraviolet irradiation.

Our experience at the Roosevelt Hospital with most of these agents has not been satisfactory and we have discarded all measures except active exercise in most cases of Colles fracture. We have found that other forms of physical therapy are usually unnecessary and, in some instances, may be harmful.

For many years we have followed a routine which I believe still has many advocates. Our patients were instructed to return to the fracture clinic for treatment the day following reduction of the fracture and on alternate days thereafter. These treatments consisted of radiant heat, light massage and cautious attempts at passive motion of the fingers and wrist, the fracture site being carefully supported on the anterior plaster splint and by the fingers of the operator. Active motion was encouraged as much as possible. Diathermy was begun at the discretion of the physical therapist, usually at the end of four or five days. Splints were discarded during the third week except in badly comminuted fractures, which were supported for one week longer. Heat, massage and diathermy were continued until the patient was discharged.

As time went on many practical objections to that method of after-care became apparent. The following are a few of the observations that we made:

1. Many patients were frightened at the very thought of having a splint removed for inspection so soon after the fracture had been set. Protective muscular spasm was so exaggerated that relaxed passive motion of the fingers was almost impossible in spite of gentle stroking massage and other forms of reassurance. In many patients this fear of pain on motion persisted and obviously retarded active use of the fingers in the later stages of treatment.

2. While some patients objected to any form of passive motion at the wrist, others who were less sensitive or less complaining permitted more passive motion than was good for them.

3. In a large percentage of the cases, swelling and pain in the fingers and wrist persisted for ten or twelve days after the injury. This we attributed entirely to two causes: lack of rest at the site of fracture and fear of active use of the fingers.

4. We found that simple transverse fractures almost invariably gave a good result. On the contrary, in

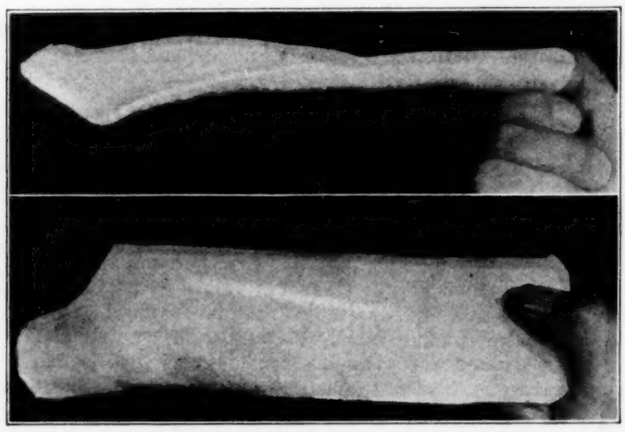

Fig. 3.—Volar splint as seen from the side and from below. Notice the portion cut away to accommodate the thenar eminence.

oblique and comminuted fractures the good position that had been obtained at the original reduction was often lost following early passive motion, in spite of every precaution. Recurrence of displacement, even when noticed early and corrected, prolonged recovery indefinitely. We saw many cases in which secondary displacement occurred during the third week of treatment.

5. Recovery of strength in the muscles of the hand and forearm was slow and was not affected appreciably by massage.

6. Diathermy did not hasten the healing of the fracture, nor did it increase the comfort of the patient.

7. We began to realize that the after-care of a Colles fracture entailed a tremendous expenditure of time on the part of the patient, the physician and the physical therapist.

About four years ago we began to abandon the use of passive motion and early massage and prolonged

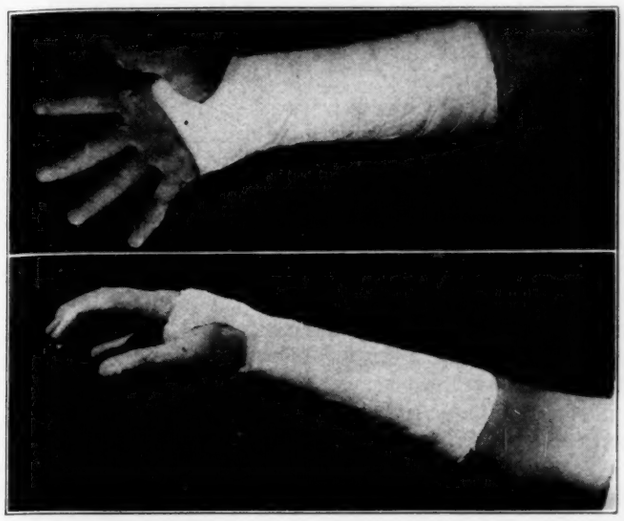

Fig. 4.—Completed splint. The thumb is entirely free and the fingers may be fully abducted. Notice in the palmar view that the plaster does not extend beyond the proximal flexion crease.

the period of fixation. Today I am quite convinced that a better recovery will be obtained in a Colles fracture if one provides, first, uninterrupted fixation of the fragments until union of the bone is secured, and, second, a splint which allows complete function of every muscle and joint that does not have to be immobilized.

Our procedure at present is a simple one. If roentgenograms show a satisfactory reduction, anterior and posterior plaster splints are applied with the wrist out straight or in slight extension and with the forearm midway between pronation and supination. The posterior splint (fig. 2) extends from the upper third of the forearm to the middle of the dorsum of the hand. The anterior splint (fig. 3) extends down to the proximal flexion crease of the palm. The portion of this splint which overlaps the thenar eminence is cut away so that the thumb can be brought over to touch the base of the little finger. Both splints are lined with a very thin layer of cotton padding, and they are securely fixed with gauze bandage. The patient is instructed to start immediate active motion of the fingers. He is permitted to discard the sling at home for several hours at a time to permit elevation of the arm and flexion and extension of the elbow.

These splints are not disturbed for about five days. By that time most of the swelling will have disappeared and the splints will be ready for final adjustment. Without disturbing the splints, we remove several layers of the outer gauze bandage. A very light circular bandage of plaster is then applied over the splints and gauze. This circular bandage must be snug enough to prevent any movement at the wrist and it must be applied so that it does not interfere in any way with complete motion of the fingers and thumb (figs. 4 and 5). The patient should be able to clench the fist completely and to pick up and use a pencil or a fork without difficulty. The splint should be light enough so that the sling may be discarded completely after a few days. There is very seldom any need for further adjustment of the splints, and they are worn until the fracture is solidly healed and all danger of recurrence of displacement has passed. In children and young adults with simple transverse fractures, fixation for three or four weeks may be sufficient. Very oblique or badly comminuted fractures should be immobilized for four or five weeks, and occasionally for six. When the splints are finally discarded, no supporting bandage is necessary. The patient is instructed to begin active motion at the wrist and he is seen once a week until he is discharged.

I have found that at the end of four or five weeks bony union is firm and that the muscles of the hand and forearm, having been actively used throughout the period of fixation, are supple and strong. Not only is the wrist joint free from pain and tenderness but, in the great majority of cases, about 50 per cent of the normal excursion of the joint is present at the time the cast is discarded. I am firmly of the opinion that a great deal of the limitation of motion of the joint usually attributed to intra-articular stiffness is due to muscular shortening. There is some limitation of motion due to contraction of the joint capsule and ligaments. This, however, usually yields readily to the pull of the actively contracting muscles of the forearm. Functional recovery in the average case is complete in six or seven weeks.

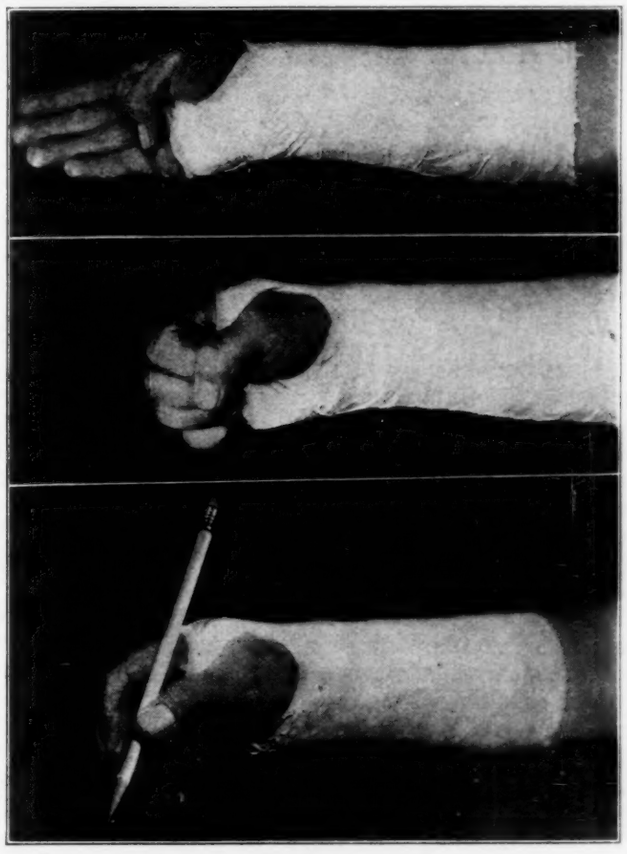

Fig. 5.—The completed splint, permitting unrestricted use of the fingers. The patient should be able to touch the base of the little finger with the thumb, clench the fist and hold a pencil without difficulty.

Fractures in adults which have never been satisfactorily reduced will never have complete functional return. Severely comminuted fractures are not only difficult to reduce but difficult to maintain in good position without some form of continued traction. I have had recurrence of deformity in many cases of this

type in spite of uninterrupted and prolonged splinting. In these cases, some limitation of motion due to bony deformity at the wrist joint is common and usually permanent. It is important to note in this connection that, whereas a functional deficiency due to muscular or ligamentous shortening will be overcome almost invariably, a functional loss due to imperfect reduction will seldom disappear.

Our experience with this method of fixation of Colles fracture covers a period of approximately four years. I have found it physiologically sound. I believe that it has spared the patient a great deal of pain and that, in addition, it has permitted him greater use of the injured limb during the period of treatment. I am convinced that it has provided functional recovery within the prescribed period with less effort, with less inconvenience and discomfort and certainly with less risk than the methods hitherto employed.

CONCLUSIONS

I wish to emphasize the following points once more:

1. A good reduction is imperative; without it no method can promise satisfactory recovery.
2. The position of the fragments must be rigidly maintained by uninterrupted fixation until bony union has occurred.
3. The plaster splint should completely immobilize the wrist joint and the site of fracture, but it must permit full and unrestricted use of the fingers and thumb.

540 Park Avenue.

UNUSUAL LOCATION OF GLOMUS TUMOR

REPORT OF TWO CASES

ROBERT C. GRAUER, M.D.
AND
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Our knowledge concerning the structure, distribution and function of the normal glomus has been greatly expanded since the original description by Masson [1] in 1924 of a tumor which resembled the glomus coccygeum of Luschka. Masson's description of the glomus tumor and Popoff's [2] subsequent studies concerning the distribution and alterations of the normal cutaneous glomus in conditions involving the peripheral vascular bed have stimulated interest in this subject.

It was suggested that the glomus tumor should not be regarded as a neoplasm but as an exaggerated development of a normal structure. This conception would simplify our understanding of the tumor and aid us in explaining its physiologic manifestations. Regarding its development and distribution, it is of practical importance as well as of academic interest that the normal glomus, which represents a cutaneous arteriovenous anastomosis, is not present before birth and does not begin to develop in the infant until after one month of postnatal life. Thus, the difficulty of maintaining an even, warm surface temperature in the newborn infant can now be explained on the knowledge that the inability of the infant's skin to adjust itself to sudden changes in temperature is due to the absence or paucity of these cutaneous thermoregulators. Only after the glomus bodies are fully developed does the individual appear to become accustomed to sudden changes in atmospheric temperature. On the other hand, the glomus undergoes atrophy in persons beyond the age of 60, and it is then less efficient in its thermoregulatory control of the skin. This would help to explain the difficulties that are encountered by aged persons during sudden changes of atmospheric temperature. The number of normal glomus bodies varies in different locations, and the increased number in the extremities probably speaks for a necessary accessory mechanism which helps to maintain the cutaneous temperature in those parts of the body which are most subject to sensory stimuli. These cutaneous pressure and thermoregulators have been found to occur chiefly on the palmar and plantar aspects of the hands and feet, the subungual regions of the extremities and, in lesser numbers, over the body in general. A close anatomic association of the glomus bodies with the pacinian corpuscles has been observed, and Maximow [3] suggested an accompanying functional association of these bodies with cutaneous pressure control.

Tumors of the glomus bodies have directed our attention to their physiologic activities, to their abnormal behavior and to the pathologic changes that occur in the previously normal glomus structures of the extremities in diabetic gangrene, thrombo-angiitis obliterans and arteriosclerotic gangrene.

Up to the present time about ninety tumors have been described,[4] located chiefly on the extremities and generally beneath the nails of the fingers and toes. It is of interest that no report has appeared of the occurrence of these tumors on the genitalia of either sex. Because the glomus tumor in both of our cases occurred on the penis, one in a child and the other in an adult, we consider it sufficiently important to call attention to their presence in a hitherto undescribed location.

GENERAL CHARACTERISTICS OF GLOMUS TUMORS

In from 40 to 50 per cent of the tumors recorded there was a previous history of trauma and they occurred chiefly on the hands and feet. The average duration of their presence, from the time of their appearance to the development of symptoms, was nine years. The tumors vary in size from one-eighth inch to three-fourths inch (0.3 to 2 cm.) in diameter, or slightly larger. The small tumors are usually subungual, while the larger ones are present in easily distensible tissue. The variation in size often depends on whether or not the tumor is under pressure. Pressure on the tumors not only influences their size but determines also the degree of associated pain. Most of the recorded cases presented a history of excruciatingly painful crises with radiation of the pain. All the subungual tumors were extremely painful and the mere brushing of the affected finger by the clothes or by some other light pressure would be sufficient to initiate a painful crisis. Scraping the nail to great thinness was found to reduce the amount of pressure and thus relieve the patient considerably.[5] Tumors that were located in the soft tissues, such as

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1. Masson, Paul: Le glomus neuromyo-arteriel des regions tactiles et les tumeurs, Lyon chir. **21**: 257 (May-June) 1924.
2. Popoff, N. W.: The Digital Vascular System with Reference to the State of the Glomus in Inflammation, Arteriosclerotic Gangrene, Diabetic Gangrene, Thrombo-Angiitis Obliterans and Supernumerary Digits in Man, Arch. Path. **18**: 295-330 (Sept.) 1934.
3. Maximow, A. A., and Bloom, William: A Text Book of Histology, Philadelphia, W. B. Saunders Company, 1930, pp. 284 and 355.
4. Radasch, H. E.: Glomal Tumors, Arch. Path. **23**: 615-633 (May) 1937.
5. Raisman, Victor, and Mayer, Leo: Tumor of the Neuromyo-Arterial Glomus: Report of Cases, Arch. Surg. **30**: 911 (June) 1935.

on the arms or legs, and in our cases on the genitals, were usually painless. Numerous explanations have been offered for the occurrence of painful crisis, but the obvious reason is one of pressure, causing pain as a result of constriction of the nerve end organs. Though the suggested association of a disturbance of sympathetic nerves may be a factor, it has been shown in one case that periarterial sympathectomy does not give relief.[6] Complete surgical excision of the tumor produces complete relief, and recurrences have not been observed. Stout[7] records a case in which a tumor recurred after nine years, but this is the only recorded case of a recurrence and consequently one may justifiably raise the question whether excision of the tumor was complete.

Fig. 1 (case 1).—Persistent, varix-like lesion on ventral surface of child's penis.

Systematic attempts to determine whether vasomotor reactions are associated with glomus tumors were made by Stabins and his associates.[8] They made local temperature studies before and after operation on two female patients who had subungual glomus tumors of the hand. Normally there is a synchronous drop in surface temperature in the hands on being immersed in cold water. However, after patients immersed their hands in water at 15 C. it was found that recovery to their previous temperatures was more rapid on the involved side than on the uninvolved side; also that during immersion the temperature on the affected side did not drop as low as on the unaffected side. There was a difference of between 6 and 8 degrees C. on the two sides. After operation the temperature changes in the two hands were found to be synchronous. There was a vasodilatation in the skin of the affected member, which disappeared after the surgical removal of the tumor. However, the disappearance of the vasodilatation did not occur until about eight weeks after surgical excision. Owing to the persistence of some pain at the site of operation, associated with vasodilatation, the authors considered the vasodilatation of the tumors as being caused by the painful sensory stimuli. This belief was strengthened by the fact that the vasodilatation disappeared when the pain ceased. Mason and Weil[9] cited a case of Paulian and his associates in which there was an increased feeling of warmth and perspiration over the whole right side of the body in which the increase in temperature of from 0.5 to 2 degrees C. was observed on the affected side. These changes disappeared following operation. Theis[10] studied a person aged 69 who complained of intermittent claudication as a result of peripheral vascular disease associated with senile arteriosclerosis. Following treatments of alternating positive and negative pressure the circulation improved and the thermocouple temperature became normal. Six weeks after treatment for the claudication a glomus tumor appeared on the leg. This was associated with sharp, agonizing pain and was followed by a peripheral drop in temperature, probably owing to an arterial spasm caused by the tumor. Excision of the tumor brought prompt relief and a return of the peripheral temperature to normal. The observations emphasize the physiologic effects produced by these tumors and indicate the association of the glomus with the maintenance of the temperature of the skin, whether through dilatation or constriction of the vessels. Theis suggested that under pathologic conditions congestion causes swelling with pressure on the nerves and consequent paroxysms of pain, while cold causes contraction of the muscular walls of the vessels, with compression of the nerve fibers between the glomus cells and resulting pain. In either event, pressure is the important precipitating factor and whether or not the disturbance is a central one with involvement of the sympathetic system is still a moot question.

Fig. 2 (case 1).—Section under low power showing the proximity of one of the many glomus units to the cutaneous surface.

The glomus tumor can be removed only by complete surgical excision. Adair[11] attempted to apply radiation in one case, using one square radium plaque of 700 millicurie hours at 1 cm. distance and a 3 mm. brass filter. This treatment was repeated but caused no change in the tumor. Lewis and Geschickter[12] applied

6. Burman, M. S., and Gold, A. M.: Glomus Tumor, New York State J. Med. **35**: 618 (June 15) 1935.
7. Stout, A. P.: Tumors of the Neuromyo-Arterial Glomus, Am. J. Cancer **24**: 255 (June) 1935.
8. Stabins, S. J.; Thornton, J. J., and Scott, W. J. M.: Changes in Vasomotor Reaction Associated with Glomus Tumors, J. Clin. Investigation **16**: 685-693 (Sept.) 1937.
9. Mason, M. L., and Weil, Arthur: Tumor of a Subcutaneous Glomus, Surg., Gynec. & Obst. **58**: 807 (May) 1934.
10. Theis, F. V.: Subungual Neuromyo-Arterial Glomus Tumor of Toe; Effect of Increased Peripheral Temperature, Arch. Surg. **34**: 1-11 (Jan.) 1937.
11. Adair, F. E.: Glomus Tumor: A Clinical Study with Report of Ten Cases, Am. J. Surg. **25**: 1 (July) 1934.
12. Lewis, Dean, and Geschickter, C. F.: Glomus Tumors (Arterial Angioneuromyoma of Masson), J. A. M. A. **105**: 775 (Sept. 7) 1935.

four courses of x-rays to a glomus tumor which had previously been diagnosed as Ewing's tumor, with no satisfactory results. One of the cases of Stabins and his co-workers failed to respond to 50 mg. hours of radium unfiltered. Stabins considered this as a therapeutic test verifying the diagnosis of glomus tumor. In one of our cases, which we at first considered

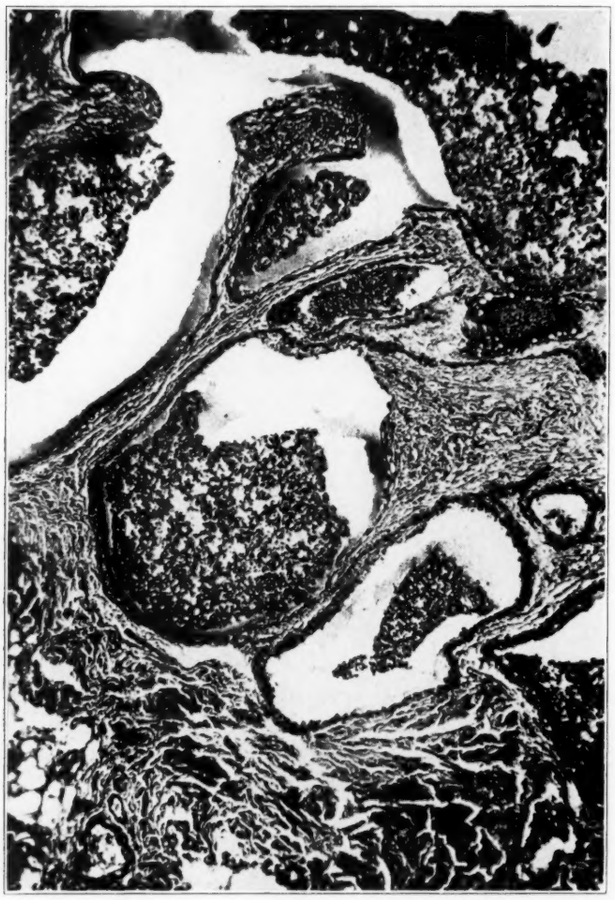

Fig. 3 (case 2).—Section of tumor under low power.

hemangio-endothelioma, four courses of roentgen treatment were given without any change in the size or character of the tumor. Two months after this treatment the true nature of the tumor occurred to us. The stubborn resistance of the glomus tumor to all means of irradiation would tend to strengthen the objection to the so-called epithelioid cells being cells of embryonic character, particularly angioblasts, since all such cells are radiosensitive. Differential stains did not enlighten us as to the possible origin or nature of the glomus cells.

Although the majority of the tumors occur singly, Weidman,[13] Bergstrand,[14] Stout and others [15] reported cases of multiple tumors. The second case reported by Bergstrand offers the additional observation that there was a diminished density of the bones of the foot in which the multiple tumors occurred, which resembled multiple cysts. The tumors in his case occupied an intra-osseous position. This occurrence had not been reported previously, though others had observed rarefaction of the phalanges, as observed by x-rays, at the site of the tumors. The pressure exerted by the expansile tumor is probably the cause of the demineralization of the contiguous bone. This appears to be a form of pressure atrophy rather than an atrophy of disuse, as was suggested by Stabins.

13. Weidman, F. D., and Wise, Fred: Multiple Glomus Tumor of Order of Telangiectases, Arch. Dermat. & Syph. **35**: 414-426 (March) 1937.
14. Bergstrand, Hilding: Multiple Glomic Tumors, Am. J. Cancer **29**: 470-476 (March) 1937.
15. Hval, Esnar, and Melsom, Reidar: Multiple Glomus Tumors, Med. rev., Bergen **53**: 545-558 (Dec.) 1936.

REPORT OF TWO CASES

CASE 1.—A boy aged 6, seen by us July 15, 1936, had a redundant prepuce with a grapelike varicosity on the inner surface of the foreskin, which became evident when the foreskin was retracted. This was about the size of a marble and had the appearance of a small cluster of veins which extended back to the ventral surface of the shaft. The nodule was a bluish purple and caused the patient no discomfort except for some pain on urination. The history obtained from the child's mother was that a bluish discoloration, similar to that observed when the child was admitted to the hospital, was first noticed when the patient was 1 year old. The redundant prepuce and the small grapelike nodule were always present, but the varix-like group of veins on the ventral surface of the penis had not been noticed. The mother stated that the child had been playing with a wagon and was hit in the region of the penis with the tongue of the wagon; it was following this that her attention was called to the varix-like enlargement. The child's past medical history and family history were irrelevant. A circumcision was performed and the foreskin and the accompanying cluster of veins were sent to the laboratory for examination.

The gross specimen consisted of two sections of prepuce, the larger section of which showed a blue discoloration on the distal portion. When cut, it was observed that numerous dilated vascular channels were filled with blood.

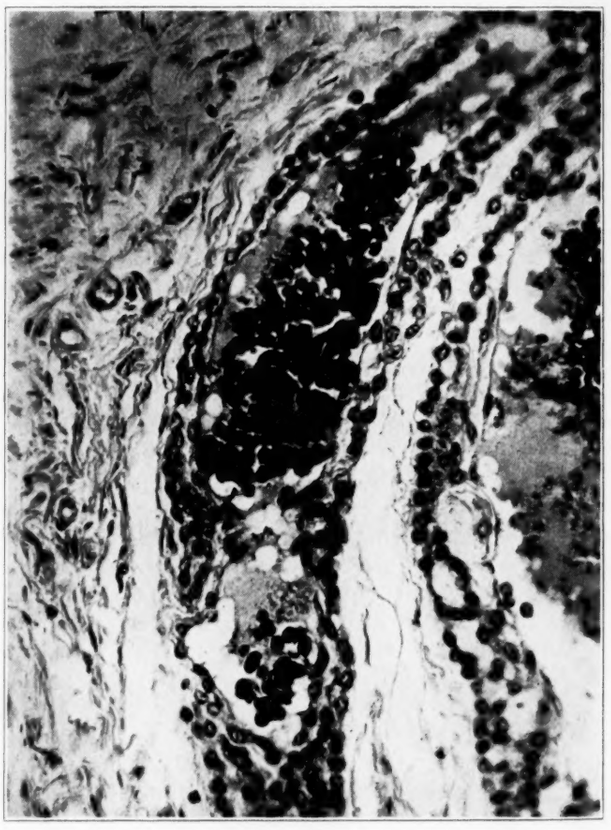

Fig. 4.—Section under high power showing intimate relationship of the glomus cells to the lining, endothelial cells of the Sucquet-Hoyer canal.

Microscopic examination revealed that the sections were covered by skin and contained numerous angiomatous units, which extended into the subcutaneous tissue from an area immediately beneath the cutaneous surface. In one of the larger sections there were twelve units placed close together. They consisted of circumscribed, angiomatous nodules that were

surrounded by collagen. The unit itself was characteristic of an enlarged glomus body. It contained a Sucquet-Hoyer canal, which was lined by a single layer of endothelium. The wall was made up of large polyhedral cells that contained pale acidophilic cytoplasm and deeply stained nuclei. The cells were characteristic of those which had been referred to as epithelioid cells and were several layers in thickness. Silver stains (Wilder) showed the presence both of reticulum and

Fig. 5.—Section under high power showing the nature of the glomus cells, which are several cell layers in thickness.

of what appeared to be myelinated nerve fibers. There were small arterioles and venules in the capsular areas, which apparently represented the nutrient vessels of the glomus. In some areas the glomus cells were in intimate contact with the endothelial lining of the vascular spaces, while in others they were separated by smooth muscle and collagen. The outstanding microscopic picture was the nature and arrangement of the glomus cells which surrounded the vascular channels and blood vessels. The cells resembled small nests of epithelioid cells, although the origin could not be determined. No mitotic figures were seen in any sections.

The diagnosis was glomus tumor of the penis.

CASE 2.—A man aged 25 presented himself in the surgical outpatient department with an angiomatous-like lesion on the penis. The patient stated that early in infancy a small red "pimple" appeared on the penis. When the patient was 14 he was hit with a baseball bat in the region of the genitals and the previously nonpainful nodule became swollen to the size of a walnut. It subsided shortly after this and assumed the size observed when he presented himself for treatment. Whereas the tumor was nonpainful previous to the injury, it became painful on pressure subsequent to it. The tumor was situated on the left dorsolateral surface of the penis about 3 cm. from the corona and measured 1.5 by 1 cm. The appearance in situ was that of a solitary varix. It was silghtly raised above the skin, was ovoid and did not pulsate. Pressure on the lesion did not cause blanching. On dissection the nodule was found to be composed of numerous vascular channels and did not have a proximal and peripheral blood supply like a varix but was fed and drained by numerous vascular channels that extended in several directions.

The specimen received in the laboratory consisted of two small pieces of cutaneous tissue which showed the presence of several dilated veins within their substance. On section these were found to be filled with blood and closely resembled varicose veins.

Microscopically the section showed a cluster of vascular channels which were lined by a single layer of endothelium. Immediately around the endothelial lining were cells that were two and three cell layers in thickness. They were polyhedral and contained acidophilic cytoplasm. The supportive tissue about the vascular spaces was collagenous. The cells had the appearance of glomus cells, and silver stain (Wilder) showed the presence of neuroreticular material.

The diagnosis was glomus tumor of the penis.

COMMENT

Popoff made an exhaustive study of the glomus units of the body in normal and pathologic conditions. He described the normal glomus as consisting of an arteriovenous anastomotic unit which was made up of an afferent artery; the tortuous Sucquet-Hoyer canal, which consists of a narrow lumen lined with endothelium and surrounded by a thick mantle of so-called epithelioid cells (of doubtful nature); the argentophilic fibers about the Sucquet-Hoyer canal; the primary collecting veins, and, finally, an outer lamellated encircling layer of collagen. He found that the distance from the inner surface of the epithelium of the skin to the glomus in the fingers and toes is about 0.5 to 1 mm.

Fig. 6.—Silver stain (Wilder) revealing the argentophilic fibers among the glomus cells.

He further observed the pertinent fact that there was no particular relation of the glomus body to the pacinian corpuscles. In his discussion of the quantitative distribution of the Sucquet-Hoyer canals he made no mention of their distribution in the male genitalia, nor were we able to find any other reference to them in this location. Because of the complex vascularity of the penis,

the finding of two tumors in this location would indicate that both normal glomus structures and possibly glomus tumors are more common here than is generally considered.

There is sufficient evidence to support the fact that the glomus is a factor in changes in cutaneous temperature. The implied alterations of cutaneous pressure have less evidence to support them. The studies of Popoff which showed the state of the glomus in arteriosclerotic and diabetic gangrene, as well as in thrombo-angiitis obliterans, may well raise the question of their association with blood pressure changes of known and unknown etiology. Cole and Sroub [16] reported the presence of a painful glomus tumor on the finger of a woman aged 33 who had a blood pressure of 200 systolic, 110 diastolic. This may have been a mere coincidence, although it possibly suggests a sympathetic nervous disturbance which had expressed itself through the development of a glomus tumor. This may seem a bit far fetched but should be borne in mind in cases of so-called essential hypertension. Stout emphasized the predominance of glomus tumors among members of the Jewish race and suggests that the predominance of disturbances of the sympathetic nervous system in this group may be a factor in explaining the comparatively high incidence of glomus tumors among the Jews.

Popoff's studies failed to show that there was a primary specific change in the glomus system associated with thrombo-angiitis obliterans. The changes that occur in the arteries, veins and skin of the digits in this condition are attributed by him to an unknown vascular anomaly rather than to a disturbance in the glomus bodies.

We call attention to the fact that true thrombo-angiitis obliterans, which occurs independently of increased vascular tension, shows no pathologic changes in the glomus, while sclerotic gangrene and diabetic gangrene, both of which are commonly associated with an increased blood pressure, do reveal definite demonstrable pathologic changes. There is a difference in predilection of the pathologic changes in the various units of the glomus body in the two conditions. In the case of diabetic gangrene, hyaline degeneration appears in the intima of the Sucquet-Hoyer canal and in the preglomus arterioles, while the intima of the afferent artery remains intact. In sclerotic gangrene the hyaline degeneration is limited to the afferent artery of the glomus. Consequently, in those conditions in which increased blood pressure becomes a fixed state, comparable sclerotic changes can be observed in the glomus bodies of the digits, whereas in a condition such as in thrombo-angiitis obliterans, in which there is an absence of increased vascular tension, the glomus bodies are uninvolved. Cases of thrombo-angiitis obliterans represent a much younger age group than do those exhibiting diabetic and sclerotic gangrene, and it may be that the hyaline changes are an expression of degeneration associated with advanced years and may have no bearing on the general condition of hypertension. But the importance of the peripheral vascular bed in explaining vascular tone and the hypertensive state is so generally conceded that any additional facts which may elucidate this problem are worthy of serious consideration.

The high incidence of associated trauma (50 per cent) with these tumors raises the question of whether there might not be a congenital weakness in the glomus bodies in the affected persons which manifests itself in an overdevelopment following injury, producing what is recognized as a glomus tumor. In both of our cases the tumors appeared on the prepuce when the patients were at least 1 year old. Whether the varix-like condition on the under surface of the shaft was always present in our first case and attention was drawn to it by the injury or whether it followed the injury could not be determined. The history of trauma precipitating a preexisting abnormality was more definite in the second case. We were unable to find any reports of the tumors appearing in patients at the age of 1 year, though Adair reported one case in a child of 6 years. The implication in this case is that glomus bodies make their appearance on the male genitals as early as 1 year of age, if not earlier.

We reviewed the sections of 122 tumors of blood vessels that had been examined in this laboratory and were unable to find any other glomus tumor of the penis.

In our microscopic studies we were able to demonstrate the various elements that are necessary for the diagnosis of a glomus tumor, including the demonstration of the argentophilic fibers about and among the glomus cells of the Sucquet-Hoyer canals. In this connection we are inclined to agree with Slepyan [17] that the argentophilic fibers resemble reticulum more than they do nerve fibers.

320 East North Avenue.

16. Cole, H. N., and Sroub, W. E.: Glomus Tumor: Arterial Angioneuromyoma of Masson, J. A. M. A. **107**: 428 (Aug. 8) 1936.

17. Slepyan, A. H.: Glomus Tumor; Report of Two Cases with Histologic Observations, Arch. Dermat. & Syph. **36**: 77-84 (July) 1937.

BERIBERI SECONDARY TO HERNIA OF THE MESENTERY

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Cases of beriberi resulting from inadequate absorption of vitamin B_1 as a consequence of prolonged vomiting in such conditions as pyloric obstruction or pregnancy, prolonged diarrhea, or short circuiting of the bowel have been reported, but in none was the disease as severe as in ours, nor, as far as we know, have all three etiologic factors previously occurred in the same case.

REPORT OF CASE

History.—E. G., a white man aged 39, who had been confined to bed for about two months because of paralysis of the lower extremities, was first seen by us Feb. 21, 1938. His nervous symptoms began early in December 1937, with numbness in the epigastrium. The numbness gradually spread downward over the lower part of the abdomen and the medial surfaces of the thighs and ultimately involved the entire lower extremities. Pain in the legs, insteps and arches began at about the same time. Weakness of both lower limbs followed shortly, so that by December 20 the gait was unsteady. December 28 the patient fell to the floor, unable to support his weight, and since that time had not been able to walk. Atrophy of the muscles of the lower extremities appeared rather suddenly toward the end of December, when the patient lost 10 pounds (4.5 Kg.) in a single week. About a month later numbness, then weakness and finally atrophy of the upper extremities appeared, but the paresthesias and weakness were not as severe in the upper as in the lower limbs. The sphincters functioned normally. The voice was reduced to a whisper during the first two weeks of January 1938 but recovered spontaneously. No other history of cranial nerve involvement was obtained. The only mental symptom was occasional disorientation in time and space. The temperature

was not elevated at any time. The spinal fluid, obtained January 25, was clear and under normal pressure and was normal cytologically, chemically and serologically. The Wassermann test of the blood was negative. The spine appeared normal roentgenographically. Prostigmine was administered during January but the muscular strength diminished steadily. The patient had been a machinist but had never worked with heavy metals, nor was he addicted to alcohol.

The first cardiovascular symptom was edema of the eyelids, appearing late in November 1937, before the onset of the nervous symptoms. It lasted only a few days at that time but reappeared in January 1938 and became much more extensive, involving the back and the distal portions of all four extremities. The urine was consistently normal. Orthopnea and constant dyspnea at bed rest, with frequent paroxysmal exacerbations, began about February 1 and were growing more severe.

Fig. 1.—Appearance of patient March 15, 1938, showing extreme generalized muscular atrophy. The edema had disappeared everywhere except from the feet.

The patient had had intermittent postprandial epigastric distress relieved by food, alkalis or vomiting since he was 10 years old. At the age of 18 an appendectomy and inguinal herniotomy on the left were performed in the hope of ameliorating his gastrointestinal symptoms, but recurrences were as frequent after the operations as before. In May 1925, when the patient was 27 years old, frequent vomiting occurred. A posterior gastro-enterostomy was supposed to have been performed at this time to relieve obstruction produced by a cicatrizing duodenal ulcer. For the next three and a half years he was entirely free from symptoms and subsequently had only mild recurrences until January 1937, when persistent vomiting again occurred. January 30 the abdomen was explored; no previous artificial connection between the stomach and any other abdominal organ was found, and a posterior gastrojejunostomy was done. The emesis stopped postoperatively, but diarrhea began during February and became so severe that the patient had from four to eleven stools a day. No blood, pus, ova, parasites or pathogenic bacteria were found in the stools, nor did the patient have fever. From May to September he worked in spite of the diarrhea, but toward the end of this period vomiting recurred and he became so thin and weak that he went to a hospital for observation.

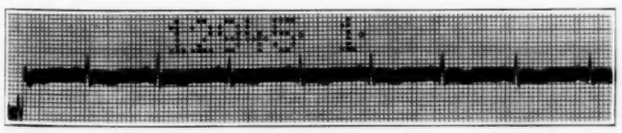

Fig. 2.—Lead 1 of an electrocardiogram taken March 8, 1938, after two weeks of thiamin therapy. Note inversion of the T wave.

He did not improve with bed rest, and insulin and dextrose administered parenterally. On the basis of roentgenologic studies it was decided that the vomiting occurred because food went through the pylorus and returned to the stomach through the gastrojejunostomy opening, thus forming a vicious circle. In the hope of breaking it a jejunojenostomy was performed in October. The diarrhea immediately ceased but emesis became worse. The patient vomited as much as 2,000 cc. at a time about once in thirty-six hours during November and December. In January 1938, about one month after the onset of the nervous symptoms, the vomiting spontaneously subsided. The patient's appetite remained good during most of his illness, but he lost about 50 pounds (23 Kg.) from his maximum weight. He had been eating a full diet since May 1937 except during the immediate postoperative period in October and had been free from epigastric distress during this time. Toward the end of January 1938 several teeth which had hitherto been in good condition broke during mastication.

Physical Examination.—When we first examined the patient, Feb. 21, 1938, he appeared almost moribund. He was dyspneic, orthopneic, pale and very emaciated, with extreme atrophy and flaccidity of all the muscles of the extremities and trunk and marked pitting edema of the face, back, hands, legs and feet. The alae nasi dilated with each inspiration, and the accessory muscles of respiration were used. The veins in the neck pulsated forcibly.

The oral mucosa was pale. Portions of several teeth were missing. The tongue was deeply furrowed and bright purplish red. The gums were firm and pale.

The cardiac pulsations were diffuse, forceful and plainly visible in the second, third and fourth left interspaces, indicating enlargement especially of the right side of the heart. The apex was in the fourth interspace 5 cm. to the left of the nipple line and the right border 1 cm. to the right of the sternum. No murmurs were heard. The rate was moderately rapid and the rhythm regular. The blood pressure was 130 systolic and 70 diastolic. The systolic sound over the partially compressed brachial artery was extraordinarily loud and booming. The skin was everywhere warm and smooth, and the palms of the hands were unusually pink in spite of the paralysis, edema, anemia and absence of fever. The back was so edematous that satisfactory examination of the lungs was impossible posteriorly. Anteriorly they were clear.

The abdomen was tensely distended and tympanitic, with borborygmus continuously audible even at a distance from the patient. Peristalsis was constantly visible in all parts of the abdomen and was especially noticeable in an incisional hernia in the epigastrium at the site of the last three operations.

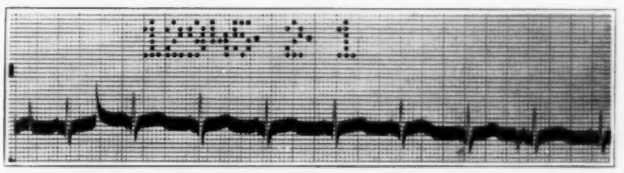

Fig. 3.—Lead 1 of an electrocardiogram taken March 24, 1938, after four weeks of thiamin therapy. The T wave is now erect.

The patient could not move his toes, ankles or wrists; motions in the knees and fingers were minimal, and in the hips, elbows and shoulders only a little stronger. He was unable to turn from side to side in bed. The extreme degree of atrophy is indicated both by the photograph taken after the edema had almost disappeared (fig. 1) and by the following measurements: maximum circumference of calf 8¼ inches (21 cm.) right, 8⅛ inches (20.6 cm.) left; circumference of thigh 8 inches (20.3 cm.) above the patella 9¼ inches (23.5 cm.) right, 9¼ inches (23.5 cm.) left; circumference of forearm 1 inch (2.5 cm.) below the internal condyle 7⅞ inches (20 cm.) right, 8 inches (20.3 cm.) left, and circumference of arm 1½ inches (3.8 cm.) above the internal condyle 6¼ inches (15.9 cm.) right, 6⅜ inches (16.2 cm.) left. The biceps, triceps, patellar, achilles tendon, abdominal, cremasteric, and plantar reflexes were absent. Tenderness of the gastrocnemii was exquisite. Perception of pain and touch was impaired on the lower part of the abdomen and all four extremities, more extensively in the lower than in the upper, and more severely in the distal than in the proximal portions. Proprioception was absent in the knees, ankles and toes. The cranial nerves were all normal.

The patient's hemoglobin content was 62 per cent by the Dare method, the red blood cell count 3,160,000 and the white cell count 3,150, with 79 per cent neutrophils, 1 per cent eosinophils, 10 per cent lymphocytes and 10 per cent monocytes. Anisocytosis, poikilocytosis, polychromatophilia, occasional macrocytosis and the presence of rare nucleated red cells were revealed by the smear.

Diagnosis.—On the basis of the multiple neuropathy in the absence of alcoholism or contact with heavy metals, the edema, the enlargement of the right side of the heart and the peripheral vasodilatation, one of us (L. M. L.) made a diagnosis of

beriberi resulting from lack of absorption of vitamin B_1 as a consequence of the vomiting, diarrhea and short circuiting of the bowel.

Thiamin Therapy and Its Results.—Treatment with intramuscular injections of thiamin chloride (crystalline vitamin B_1) was begun February 23 with 25 mg., and the dose was repeated February 26. Beginning March 1, daily injections of 10 mg. were given for five days, then 25 mg. daily for

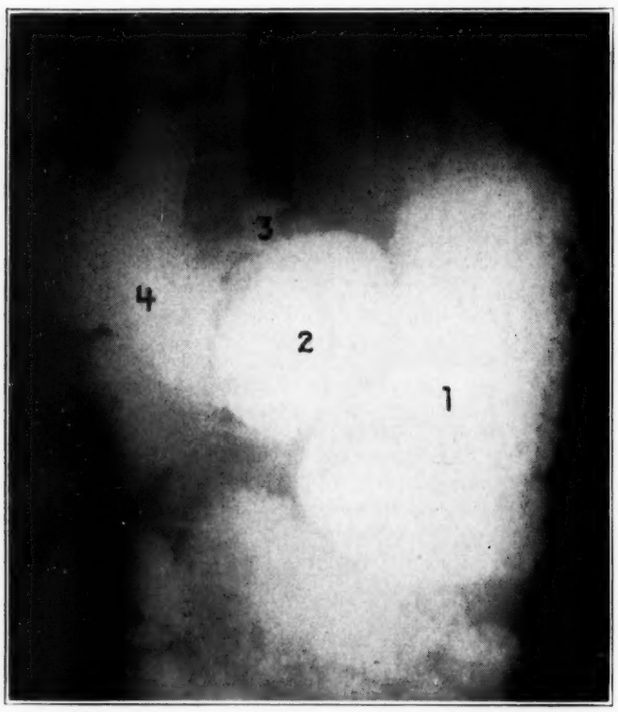

Fig. 4.—X-ray appearance Jan. 22, 1937: 1, greatly dilated pylorus; 2, duodenal cap; 3, duodenal ulcer scar, and 4, enormous dilatation of the duodenum distal to the ulcer.

fifty days and thereafter 10 mg. daily. The parenteral route was chosen both because of the severity of the deficiency and because the disease originated from faulty intestinal absorption. The day after the first injection the edema of the hands had diminished appreciably. By the time the patient entered Michael Reese Hospital in the service of Dr. Sidney Strauss nine days later the edema of the back was gone and that of the extremities greatly diminished. Within a month it had entirely disappeared. The dyspnea and orthopnea were relieved at about the same time. The pulse rate, which had been about 80 during the various periods of hospitalization in 1937 and had ranged between 100 and 130 during the last two weeks of January 1938, dropped to 50 three days after the first injection and then gradually rose to between 80 and 100. The size of the heart, as determined by percussion, also decreased, and the visible pulsations in the second, third and fourth interspaces became less conspicuous. In the electrocardiogram taken March 8 (fig. 2) the T wave in lead 1 was inverted, a change occurring frequently in beriberi. By March 24 it had become upright (fig. 3). March 8 the circulation time, determined by the calcium gluconate method, was fifteen seconds, a normal rate. The circulation time is usually decreased in patients whose decompensation results from subvitaminosis B_1 or thyrotoxicosis, in contrast to its increase in all other forms of decompensation. However, its return to normal is one of the first evidences of improvement in beriberi heart disease, and since the patient had been under treatment for two weeks when the determination was made, this result is consistent with the diagnosis.

Improvement in the nervous system was less prompt and less complete than in the circulatory system but was nevertheless progressive. About ten days after therapy was instituted, the patient lifted a handkerchief from the bed, an act he had been unable to perform for more than a month previously. At the end of two weeks he was able to grasp and lift a heavy pen knife. After three weeks he turned his body enough so that he fell out of bed as he was going to sleep. He could extend his wrist against gravity after six weeks, and at the end of ten weeks he had sufficient control to pick up a nickel from the bed. Sensory disturbances undoubtedly interfered with his ability to perform skilled acts. The strength of the muscles in the lower extremities improved correspondingly except that no recovery was observed in the muscles moving the ankles and toes. Tonus gradually returned in the various muscle groups. Although nothing had been done to prevent contractures prior to the time we first saw the patient, none had appeared. However, as the tonus improved, contractures began to develop in the gastrocnemii and hamstrings. Treatment with plaster splints and passive exercise were instituted. The right cremasteric, right upper abdominal, both biceps and both triceps reflexes returned.

The patient's response to tests of sensation varied from day to day and was always better in the morning than in the evening. Improvement was therefore rather difficult to evaluate, but over a period of weeks it was evident that sensory perception was returning. At the initial examination, perception of pinprick was lost on the dorsal surfaces of both hands and on the volar surfaces of the digits and was impaired on the anterior surface of the right upper extremity almost as high as the axilla. By May 10 pinprick produced a sharp and burning sensation in all distal phalanges and was perceived on the remainder of the hands as only slightly dull instead of entirely absent. No impairment in sensation was noticeable above the wrists at this time. In the lower extremities, as in the upper, more improvement occurred in the proximal portions. Pain perception had been impaired throughout the lower limbs and lower part of the abdomen at first. May 10 it was normal down to several inches below the inguinal folds. In the right foot, which had formerly been totally anesthetic, pinprick was perceived as a burning sensation. As early as April 1, perception of cold had returned to the right foot. As sensory perception improved, he complained more of pain and paresthesias. He stated, for example, that his hands felt "swollen and heavy" after the edema had disappeared, although when it was present he had not mentioned this sensation. Allochiria was observed in the thighs April 6. Tenderness of the gastrocnemii diminished progressively. Proprioception returned in all the joints except those of the toes but remained incomplete in the ankles. Disorientation became retrograde only.

Course.—Although the nervous and cardiovascular systems improved under thiamin therapy, the patient, who was 5 feet 10 inches (178 cm.) tall and weighed only 94 pounds (42.6 Kg.) after the edema had disappeared, failed to gain weight and had persistent symptoms of gastric retention. His appetite, ravenous in the morning, was nil toward evening, when he felt too full to eat even when he did not vomit. April 8 emesis began again, and it recurred every few days, always late in the afternoon. This, together with the persistent loud borborygmus and visible peristalsis in both the stomach and the bowel, indicated that partial intestinal obstruction was present. A careful inspection of the roentgenograms taken in January, April and October 1937 and on April 27, 1938, revealed that in each of them the entire duodenum as well as the stomach was enormously dilated (fig. 4). It was therefore evident that the obstruction did not arise from the ulcer in the duodenal cap but was distal to it, perhaps in the region of the ligament of Treitz, and that it had not been relieved by any of the previous

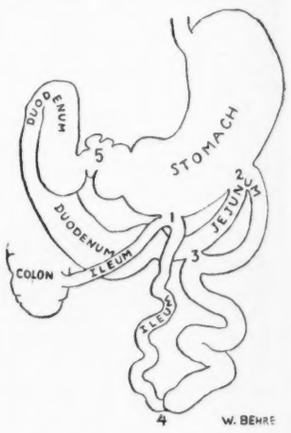

Fig. 5.—Diagram of the gastrointestinal tract as it was found at operation May 16, 1938: 1, gastro-ileostomy, May 1925; 2, gastrojejunostomy, January 1937; 3, jejunojejunostomy, October 1937; 4, site of hernia in mesentery, and 5, duodenal ulcer scar.

operations. Because it was thought that the patient could never become entirely well unless his assimilation of food could be improved, it was decided to explore the abdomen again.

Operation.—May 16, after two preoperative blood transfusions, an exploratory laparotomy was performed by Dr. Alfred Strauss with the patient under cyclopropane anesthesia. The stomach was enormously hypertrophied and dilated, and the duodenum was about the size of a normal large bowel.

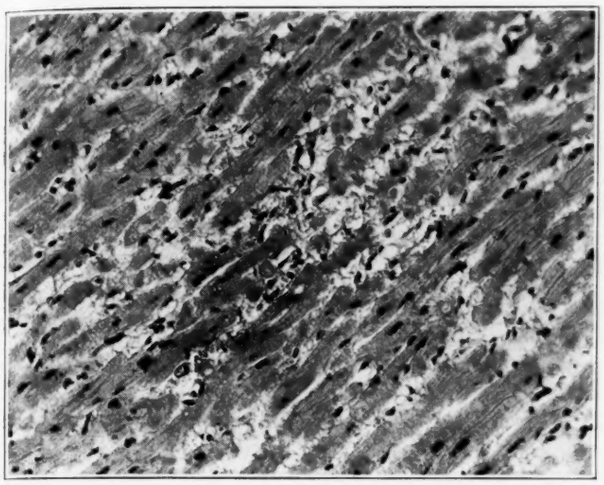

Fig. 6.—Section of myocardium, showing edema and disruption of muscle fibers and increased amount of loose areolar tissue.

The entire small intestine was brought outside the abdomen for examination. It was distended, but no vascular strangulation was observed. Three different anastomoses were found, one between the stomach and the terminal part of the ileum at a point about 1 foot from the cecum, presumably done in May 1925; another between the stomach and the proximal part of the jejunum, and a third between two loops of jejunum, one proximal to the gastrojejunostomy and the other distal to it (fig. 5). The obstruction was distal to the jejunojejunostomy passage and was produced by a congenital defect in the mesentery through which about 15 feet of small bowel had herniated. It was located midway between the ligament of Treitz and the cecum. Moderate constriction of the bowel by the hernial ring was responsible for the partial obstruction. The hernia was reduced, the defect in the mesentery was repaired, the three anastomoses were cut apart, and the six stomas thus produced were closed, restoring the gastrointestinal route to normal.

Although the operation lasted for three hours and the patient appeared to be a poor operative risk because of his long illness and extreme emaciation, the postoperative course for the next few days was remarkably uneventful. The temperature remained normal, the pulse rate did not rise above 80 and almost no abdominal pain was experienced. Borborygmus was no longer audible. Wangensteen drainage was discontinued May 19, when the patient began to eat well. May 20, however, mild diarrhea developed, followed by slight fever the next day. The abdomen, which had not been distended after the operation, again became tense, abdominal pain followed and the temperature and pulse rate rose. In spite of the reinstitution of Wangensteen drainage, numerous blood transfusions and the parenteral administration of adequate amounts of fluid, the patient grew steadily worse, and he died May 27, eleven days after the operation.

Autopsy.—The essential pathologic changes found at necropsy by Dr. Otto Saphir were a perforation of the recently closed stoma in the terminal part of the ileum with generalized fibrinopurulent peritonitis, severe edema of the myocardium, severe intraneural connective tissue edema and myelin sheath degeneration of the peripheral nerves, and caseous tuberculosis of the periaortic and peritracheal lymph nodes with encroachment on the tracheal wall.

The stomach, which had been enormously distended at the operation eleven days earlier, had contracted to normal size. The rugae were elevated, coarse and hyperemic, indicating that chronic hypertrophic gastritis was present. A recent ulcer was found in the stomach immediately adjacent to the more distal freshly closed stoma, but this had not perforated. The duodenum just beyond the pylorus contained two diverticula with intervening scar tissue, evidently the site of the old duodenal ulcer. In the region of the three recently closed ostia in the proximal part of the jejunum, a puckering of the mucosa constricted the lumen to some extent. The ostium in the ileum, through which intestinal contents had escaped, contained some loose and some broken sutures.

The heart weighed 250 Gm. and its shape was normal. In microscopic sections in some areas the muscle fibers were disrupted and more or less replaced by loose areolar connective tissue in which were numerous small empty spaces, while in other areas the cross striations were obscure and the muscle fibers granular and atrophic (fig. 6).

The brain and spinal cord were normal. In sections of peripheral nerves (fig. 7) marked edema was seen between the individual nerve fibers. Between the nerve bundles, edema and an increased amount of loose areolar connective tissue were present. Vacuolization and fragmentation of some of the nerve fibers and the presence of many large mononuclear cells were noted. In Weil myelin sheath stains, swelling and fragmentation of some of the myelin sheaths, with much replacement of the nerve fibers by connective tissue, were observed.

All the voluntary muscles were severely atrophied, and cloudy swelling was present in some of the fibers.

Tubercles were found in the peritracheal and periaortic lymph nodes and in those surrounding the right common carotid artery as it ascends into the neck. A solitary tubercle was seen in the spleen. In a microscopic section of the trachea, the encroachment of the caseous tubercles on the lumen was confirmed by the complete absence of cartilage and the presence of necrotic material immediately beneath the mucosa.

COMMENT

Nutritional Deficiencies.—In view of the cause of the subvitaminosis B_1 it was reasonable to suppose that other dietary deficiencies might be present. No means for testing the adequacy of vitamin A nutrition were available other than observation of the skin and conjunctivas, which were normal. Pellagra was not present, since the patient did not have dermatitis or stomatitis, and neither the gastrointestinal nor nervous symptoms were characteristic of this disease.

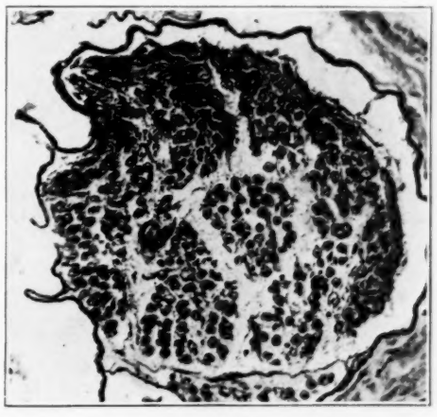

Fig. 7.—Section of peroneal nerve. Note the edema between the nerve fibers and nerve bundles and the increased amount of areolar tissue between bundles.

Furthermore, the gastric juice contained 18 units of free and 84 of total acid. Yeast cells were seen in the gastric contents, confirming the presence of free hydrochloric acid. No clinical evidence of scurvy was observed. Adequate tissue saturation with vitamin C was confirmed by the excretion of 65 mg. of ascorbic acid in the urine in twenty-four hours with the patient

on his usual diet, the normal daily urinary excretion being from 30 to 45 mg. The presence of vitamin D in adequate quantity is indicated by levels for blood calcium of 9.3 mg., for blood phosphorus of 2.6 mg. and for serum phosphatase of 3.4 units, all within normal limits for adults.

Although no other vitamin deficiency was found, other types of deficiency were present. The total blood protein content March 7 was only 5.4 Gm. per hundred cubic centimeters, with 3.4 Gm. of serum albumin and 2.0 Gm. of serum globulin. Possibly the edema was to some extent a result of hypoproteinemia, although its rapid disappearance with thiamin therapy without change in the diet indicates that it was more likely cardiovascular in origin. Another evidence of some type of deficiency was the persistence of hypochromic, macrocytic anemia in spite of daily parenteral doses of liver extract for several weeks and iron given both by mouth and parenterally. Only 0.5 per cent of reticulocytes were present March 15 even with the stimulus of liver therapy. This is less than the percentage found in normal blood. The red cell count and hemoglobin content remained essentially unchanged until a blood transfusion was given April 22, when they rose slightly. A more marked rise to 4,740,000 with a hemoglobin content of 80 per cent occurred after a second transfusion May 12. The breaking of the teeth was probably also a result of some type of nutritional deficiency, the nature of which we do not know.

The most striking evidence of insufficient absorption of food was the failure of the patient to gain weight. In spite of a high caloric, high protein, high vitamin diet his weight remained about 94 pounds (42.6 Kg.) during more than two months in the hospital. Yet food stayed in the gastrointestinal tract long enough for absorption to take place, for bowel movements, though copious, ordinarily did not occur oftener than once a day. At first we thought that some of the gastrointestinal symptoms might be a result of the subvitaminosis B_1, but the longer we observed the patient the more apparent it became that partial obstruction must be present.

Dosage of Thiamin.—At first a daily dose of 25 mg. was given to make sure that the patient was receiving an adequate amount of the vitamin. This was later reduced to 10 mg. daily, and progress was just as rapid with the smaller as with the larger dose.

Hernia of the Mesentery.—The type of mesenteric hernia found in this patient, involving the upper portion of the jejunum, is exceedingly rare. In 1932, only thirty-two cases had been reported in the literature.[1] Although it may have been a congenital defect, presumably it produced no symptoms until January 1937. All the preceding gastrointestinal symptoms can be accounted for on the basis of the old duodenal ulcer, but during and subsequent to January 1937 the symptoms were probably a result of low grade obstruction produced by the unrecognized hernia, complicated by the various anastomoses. The enormous size of the stomach was probably a consequence of the intestinal obstruction rather than of the old ulcer, since the stomach had returned to its normal size within eleven days after the relief of obstruction, though the ulcer had not been touched.

1. Edwards, C. R.: Acute Intestinal Obstruction Due to Mesenteric Defects Requiring Massive Resection, J. A. M. A. **99**: 278 (July 23) 1932.

Cardiac Changes at Autopsy.—The microscopic cardiac and nervous changes are typical of both experimental and clinical vitamin B_1 deficiency. Those in the nerves were to be expected, for function was still greatly impaired in spite of the prolonged treatment. Those in the heart, however, were not anticipated, for the heart had been clinically normal since the end of the first month of thiamin therapy and no enlargement of its right side was found on gross examination.

Tuberculosis.—The caseous tuberculosis was an entirely unexpected observation. The patient's temperature had risen to 100 F. and the pulse rate to from 90 to 100 a minute a number of times during his period of hospitalization, but this was attributed to a reaction to the injections of liver extract or to cachexia. It is probable, however, that it was actually a manifestation of tuberculosis and that the tuberculosis was a consequence of the severe and prolonged undernutrition.

SUMMARY

Wet beriberi was a result of impaired absorption of vitamin B_1 as a consequence of a partial intestinal obstruction caused by a hernia in the mesentery, complicated by a gastroileostomy, a gastrojejunostomy and a jejunojejunostomy. The diagnosis was confirmed by the improvement of the patient under thiamin therapy and by autopsy.

30 North Michigan Avenue.

TULAREMIC INGUINAL BUBOES FOLLOWING TICK BITES

REPORT OF TWO CASES

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NEW ORLEANS

A bubo in one or both groins associated with fever is common. It is usually presumed to be of venereal origin. Frequently it occurs with pyogenic infections of the lower extremities, scrotum, perineum or pubis. The local lesion may be so small as to be overlooked or so slight as to be disregarded as the cause of the lymphadenitis. In certain localities bubonic plague must always be kept in mind.

Six cases of tularemic inguinal lymphadenitis following tick bite have appeared in the literature.[1] The two cases reported here illustrate that clinically the disease may be readily mistaken for any of the types of bubo mentioned.

CASE 1.—*History.*—A white man aged 23 was sent to the hospital May 8, 1937, from the CCC Camp at Bogalusa, La., because of fever and bilateral inguinal lymphadenitis. On admission his temperature was 39.7 C. (103.4 F.) and the pulse rate 120. He had some pain in both groins, which was augmented by walking. The distal superficial subinguinal nodes on the right side were enlarged and beginning to fuse. The mass measured 4 cm. in diameter. It was freely movable and tender

The Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, furnished the photographs of the ticks.

1. These were reported by:
Magath, T. B., and Yater, Wallace M.: Three Cases of Tularemia, M. Clin. North America **10**: 745 (Nov.) 1926.
Kerlin, W. S.: Tularemia: Review of Literature with Report of Case, New Orleans M. & S. J. **81**: 723 (April) 1929.
Hanson, E. C., and Green, R. G.: Tularemia in Minnesota, J. A. M. A. **92**: 1920 (June 8) 1929.
Schultze, V. E., and Marr, W. L.: Tularemia in Texas, Texas State J. Med. **29**: 643 (Feb.) 1934.
Miller, J. W.: Tularemia: Report of a Case, Proc. Staff Meet., Mayo Clin. **13**: 494 (Aug. 3) 1938.

on pressure. The skin was not changed. The corresponding nodes on the left side were enlarged, discrete and tender. The largest measured 1.5 cm. in diameter.

For the past five days the patient's appetite had been poor and he was nauseated. He had vomited once. May 6 he had some pain in the right groin and found a tender "kernel." Later that day his left groin became painful. The venereal history

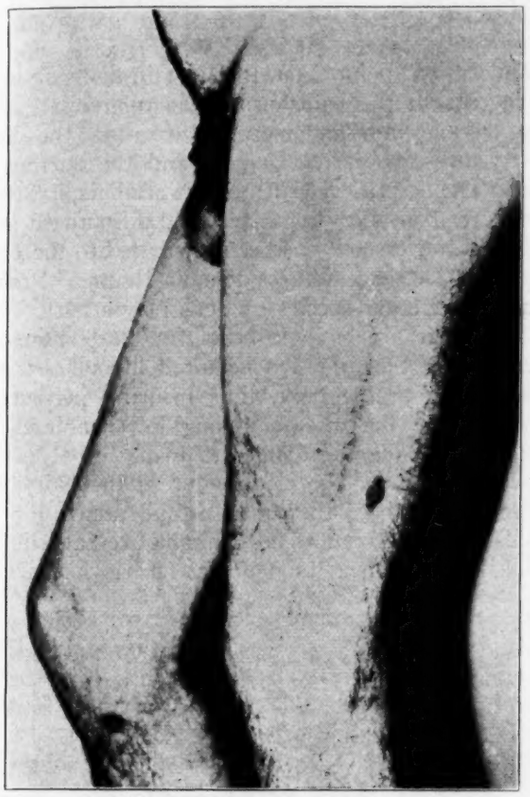

Fig. 1.—Tularemia: bilateral primary lesion.

was irrelevant. May 10 the patient was given the Frei test and reexamined. At this time a superficial ulcer 5 mm. in diameter covered by a thin black scab was found on the anteromedial aspect of the right leg just below the knee. A similar but apparently more recent ulcer was present on the lateral surface of the lower third of the thigh. Numerous scratches, excoriations and pinpoint pink papules were present on both legs. Inquiry about these lesions disclosed that the patient worked in underbrush where ticks were plentiful. At night he often removed as many as thirty ticks from his body. He first noticed the sore on his right leg when his groin became painful. He attributed this to scratching. When his attention was called to the ulcer on the thigh, he stated that it was "just a pimple several days ago."

Laboratory Data.—The leukocyte count was 8,500 per cubic millimeter, with a differential count of 69 per cent polymorphonuclears, 23 per cent lymphocytes, 6 per cent monocytes and 2 per cent eosinophils. The Wassermann, Kahn and Frei tests were negative. Smears and cultures of material from the ulcers and of the pus aspirated from the bubo in the right inguinal region showed no micro-organisms. Three guinea pigs inoculated subcutaneously with pus and brought to autopsy after nine, eighteen and twenty-seven days, respectively, showed no lesions.

The macroscopic tube agglutination test for Bacterium tularense with the patient's serum May 20 with a titer of 1:320 showed complete agglutination, June 3 with a titer of 1:640 complete agglutination, June 18 with a titer of 1:1,280 complete agglutination and with a titer of 1:2,560 partial agglutination, and June 26 with a titer of 1:2,560 complete agglutination and with a titer of 1:5,120 partial agglutination.

After I obtained this high and progressively rising agglutination titer, more pigs were inoculated with pus from the right bubo, again with negative results. When I spoke with Dr. Edward Francis about this case, he informed me that pus from suppurating lymph nodes infected with Bacterium tularense rarely yields the micro-organism on culture or produces infection in guinea pigs after the first month of illness.

Course.—The patient was decidedly ill. The fever continued for twenty-five days with morning remissions and evening rises in temperature to 38 or 39 C. (100.4 or 102.2 F.). The whole group of superficial inguinal nodes on both sides became involved and very painful. They formed huge doughy and fluctuant buboes. The skin was intensely red, edematous and adherent. Later it showed hemorrhagic and purplish discoloration and was very thin over the dome of the buboes. After three weeks of progressive suppuration the right bubo burst, discharging blood-streaked yellow creamy pus and sloughs of necrotic tissue. The bubo on the left side was aspirated and incised. Ugly, indolent wounds resulted. These healed after a number of weeks of energetic and varied treatment.

CASE 2.—*History.*—A white man aged 22 was sent to the hospital May 28, 1937, from the CCC camp at Springville, La., because of fever, chills, and inguinal lymphadenitis on the right side. On admission the temperature was 38.8 C. (101.8 F.) and the pulse rate 96. A subinguinal bubo 5 by 7 cm. in diameter was present on the right side. It was painful, tender on pressure and fluctuant in areas. The skin over the bubo was freely movable and not altered. The bubo had been developing for two weeks. In the past few days it had become painful, and the patient had chills, fever and a cough and ached all over. His head ached severely.

Long-standing dermatitis venenata due to poison oak was present over both legs. Small faint papules and excoriations were present over the legs, thighs and lower part of the abdomen. The patient stated that these were due to ticks, which he removed from his body daily after working in the woods.

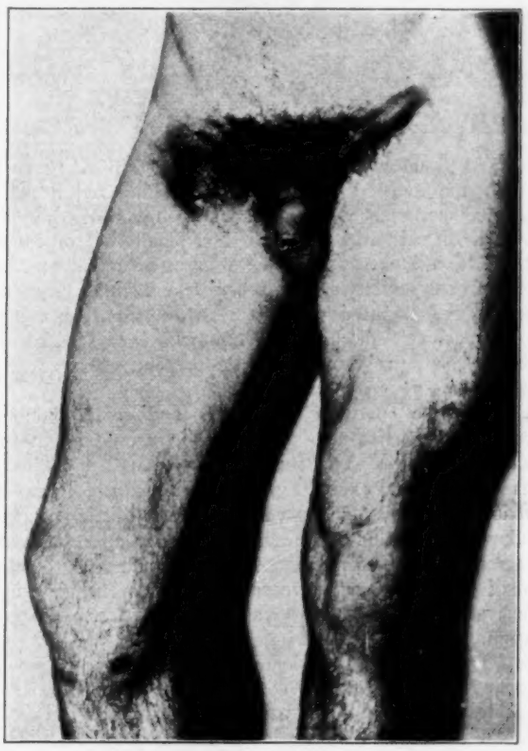

Fig. 2.—Bubonic tularemia, showing hemorrhagic discolorations of the skin over the buboes.

Three days previously he had removed a tick that was deeply embedded in the right scrotal fold, and he found one on the back of the scrotum after entering the hospital. The venereal history was irrelevant.

Laboratory Data.—The leukocyte count was 7,600 per cubic millimeter, with a differential count of 68 per cent polymorphonuclears, 27 per cent lymphocytes and 5 per cent monocytes. The Wassermann, Kahn and Frei tests were negative. The macroscopic tube agglutination test for Bacterium tularense

with the patient's serum May 29 with a titer of 1 : 640 showed complete agglutination, June 12 with a titer of 1 : 640 complete agglutination and with a titer of 1 : 1,280 partial agglutination, and June 29 with a titer of 1 : 1,280 complete agglutination.

Pathologic Study of the Excised Bubo.—The gross specimen consisted of six lymph nodes, of which the smaller were discrete and the larger partly matted together. The largest node measured 2.7 cm. in diameter. The nodes were soft and the

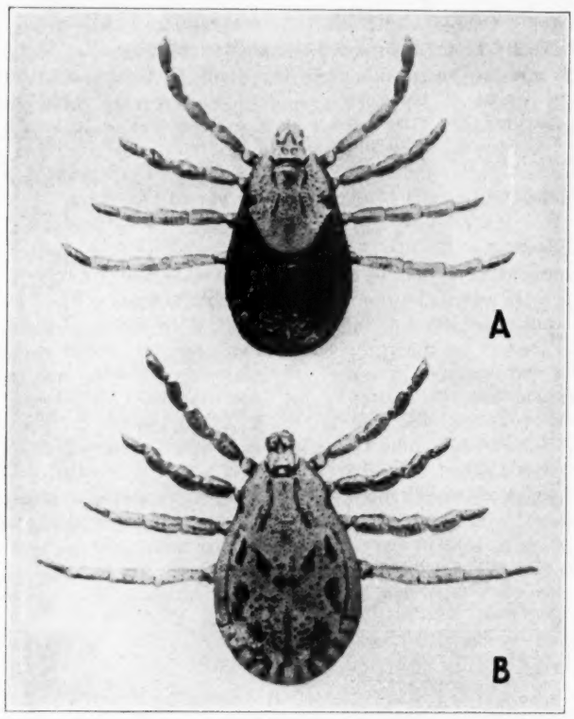

Fig. 3.—Dermacentor andersoni, *A*, female, *B*, male.

periadenoid tissue was hemorrhagic. On section the parenchyma was pink and mottled with miliary gray and red flecks.

Microscopically the lymphadenoid architecture was largely suppressed or obliterated. Large and small foci of early and advanced caseation containing aggregates of intact and degenerated polymorphonuclears were present in the large nodes. These were marginated by mantles of palisaded epithelioid cells. Occasional epithelioid granulomas and areas of diffuse epithelioid cell proliferation were present. Some of these showed beginning coagulation necrosis.

Infiltrations of polymorphonuclears and small numbers of monocytes and plasma cells were present throughout the parenchyma in all nodes. The sinuses were dilated and filled with serous exudate containing polymorphonuclears, lymphocytes and macrophages. Capillary vascularization of the parenchyma, irregular fibroblastic overgrowth, intense congestion and foci of hemorrhagic extravasation were present. An occasional focus of reticulum cell hyperplasia was seen. Fibrin was demonstrable in the margins of an occasional focus of beginning caseation.

The capsules and periadenoid tissue were overgrown by hemorrhagic vascular granulation tissue that showed focal abscessing and diffuse suppuration, dense lymphocyte infiltration and small numbers of monocytes and plasma cells. Fibrin was demonstrable in areas.

Many Langhans giant cells were present throughout the parenchyma, associated with and apart from the granulomas. Some were also present in the periadenoid granulation tissue.

The small and medium sized arteries showed diffuse edema and lymphocyte infiltration of their entire wall, various degrees of adventitial fibroblastic overgrowth and intimal proliferation with stenosis of the lumen.

Micro-organisms were not demonstrable in sections stained by the Gram, Gram-Weigert, buffered Romanowsky or Ziehl-Neelsen method or the Nile blue sulfate method advocated by Foshay.

Course.—The fever continued with morning remissions and evening elevations in temperature to 37.8 or 38.6 C. (100 or 101.4 F.) for over three weeks, until it was decided to excise the bubo. During this period it enlarged only slightly, but it became considerably softer and in areas markedly fluctuant. The skin was purplish and thin over the areas of fluctuation.

Within a week after the bubo was excised the patient became afebrile and began to improve. The wound healed slowly.

COMMENT

Francis [2] has pointed out that certain ticks are important agents in the transmission of tularemia. Wood ticks, Dermacentor andersoni, have caused the disease in fifty-three cases in Montana and the surrounding states. The dog tick, Dermacentor variabilis, has caused it in more than sixty-five cases in the Southern states, and in several cases it has been attributed to the Pacific Coast tick, Dermacentor occidentalis Neum.[3] Probably a number of other species of ticks play a part.

These ticks are biologic hosts for Bacterium tularense; that is, the infection acquired in one tick stage is passed on to the next, thus insuring perpetuation and spreading the disease among lower animals and thereby increasing the danger to man.

Ticks bite under the clothing or in the hairy areas of the body, where they may escape notice for long periods. The perineum and genitalia are favorite sites of tick bite. Francis [4] stated that he had had a dozen

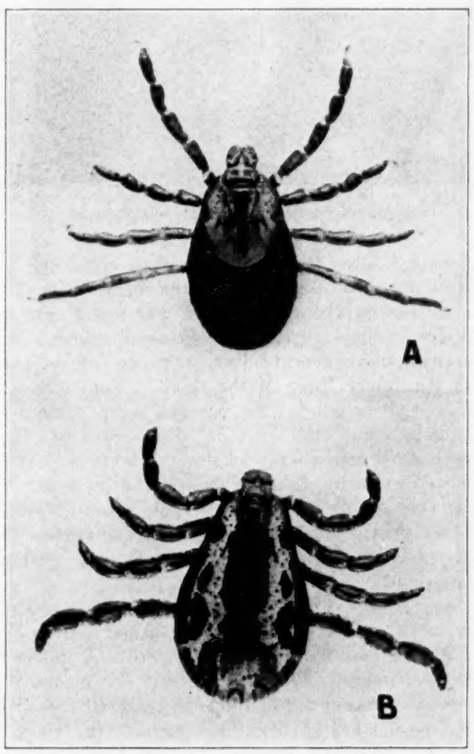

Fig. 4.—Dermacentor variabilis, *A*, female, *B*, male.

reports by letter of inguinal lymphadenitis that followed the bite of infected ticks in these areas. In several cases the adenitis was bilateral. In one of these the ulcer was present at the midline over the coccyx and in one over the pubis, in one there were multiple

2. Francis, Edward: Sources of Infection and Seasonal Incidence of Tularemia in Man, Pub. Health Rep. **52**: 103 (Jan.) 1937.
3. Bishopp, F. C.: Ticks and the Role They Play in the Transmission of Diseases, Washington, D. C., Smithsonian Institution, Annual Report, 1935, pp. 389-406.
4. Francis, Edward: Personal communication to the author.

perineal ulcers and in one there was an ulcer on each leg, from which sites seed ticks had been removed several days previously.

The buboes in the two cases here reported occurred in May within three weeks of each other. The infection is seasonal, owing to the periodic prevalence and activity of the ticks and probably also to game laws.

From March to August are the months recorded for the onset in fifty-three cases of tularemia due to the wood tick, Dermacentor andersoni. These months correspond with the season of greatest activity of this species. This tick becomes infected in the larval or nymphal stage by feeding on infected rodents, and as an adult it infects man when it feeds on him. It has been found to feed in its various stages on a large variety of animals, the most important hosts of the immature stages being mice, ground squirrels and pine squirrels, while the adults feed mainly on larger wild and domestic animals.

From January to October are the months recorded for the onset in fifty-three cases of tularemia due to the dog tick, Dermacentor variabilis. The disease is widely distributed over the eastern two thirds of the United States and also occurs in California. In distribution therefore it almost occupies the portions of the United States not covered by the wood tick, Dermacentor andersoni. It is especially abundant along the coast from Cape Cod to the extreme southern part of Texas. It is troublesome as a parasite of dogs, horses, cattle, rabbits and man.

The wood tick, Dermacentor andersoni, and the American dog tick, Dermacentor variabilis, are related species. They resemble each other in general appearance, and their habits are similar. These ticks are especially abundant in wooded areas which are heavily overgrown with vines and underbrush. This condition not only gives the ticks protection but also protects the small wild rodents on which the young ticks feed. This at once suggests the desirability of cleaning out undergrowth and destroying small wild rodents in the vicinity of habitations and camps. In areas where hawks, owls and other predatory birds abound, removing the brush exposes the rodents to the attack of these birds.

It is stated that tick bites can be avoided by wearing proper clothing to exclude the ticks. Too much dependence, however, should not be placed on the exclusion of ticks, and the body should be thoroughly examined at frequent intervals when one is walking or working in tick-infested areas. Special attention should be given to the examination of the scalp and other hirsute areas of the body.

The number of ticks in a given area can be distinctly reduced by dipping infested dogs [3] and other livestock in a suitable tick-destroying solution or, in the case of pet dogs, by systematically picking the ticks from the animals to prevent the dropping of any engorged females. In removing ticks from dogs it should be borne in mind that the mere handling of an infected tick may cause infection, because Bacterium tularense can penetrate the unbroken skin. Hence the ticks should be picked off with forceps and the hands well washed with antiseptic solution.

Ticks removed from boys at the CCC camps in southern Louisiana from time to time were identified as the dog tick, Dermacentor variabilis, and the lone star tick, Amblyomma americana. A number of times ticks of both species were ground up and inoculated into guinea pigs. After weeks of observation the animals were well and showed no lesions at autopsy.

Diagnosis.—A bubo in the groin or regional lymphadenitis anywhere, when associated with fever, an ulcer of the skin or excoriations and scratches resulting from insect bites and coupled with a history of tick bite or fly bite (Chrysops discalis) should suggest tularemia. The agglutination of Bacterium tularense by the patient's serum in a dilution of 1:80 or higher is considered diagnostic of tularemia, provided there is no cross agglutination with Brucella abortus and Brucella melitensis.

SUMMARY

Bubonic tularemia of the groin is clinically similar to other types of inguinal bubo. The pus of suppurating tularemic buboes will rarely yield Bacterium tularense on culture or produce lesions in guinea pigs. Regional lymphadenitis associated with fever, an ulcer of the skin or excoriations and scratches resulting from insect bites, coupled with a history of tick bite or fly bite, is suggestive of tularemia. The agglutination of Bacterium tularense by the patient's serum in a dilution of 1:80 or higher is considered diagnostic.

STERILE MOTILE SPERMATOZOA, PROVED BY CLINICAL EXPERIMENTATION

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NEW YORK

In May 1935 Mr. and Mrs. K. presented themselves with the problem of sterility. Both patients had been examined several times during their eleven years of married life. Neither husband nor wife had ever been operated on, nor had they at any time been ill other than with slight colds, and Mrs. K. with sinus trouble, which was a chronic condition, not severe enough to warrant operation. The last examination that they had undergone in an endeavor to determine the reason for their sterility occurred eight months before they presented themselves to me for reexamination.

Mr. K. was examined first and found to be in excellent health. A specimen of seminal fluid was obtained by withdrawal, the material being collected in a sterile pyrex beaker. The count revealed 94,000,000 spermatozoa per cubic centimeter of fluid, abnormal forms 3 per cent, motility index eighteen hours, fertility index (?) and pus absent. The spermatozoa were very active with markedly active use of the tail, movements of which were exceedingly rapid. With interference of viscid mucus obtained from the wife's cervical mucous plug, the spermatozoa, after becoming entangled, persisted for as much as an hour and a half to penetrate the obstruction. This, by the ordinary criterion that has been used to date, would have exonerated Mr. K. of any part in the sterility.

Mrs. K. was then examined. Her organs were freely movable on bimanual examination. There was no history of any pelvic abnormality; the menstrual cycle was normal; her weight and height were normal for her age, 38. Her mother did not cease menstruating until she was 49. The siblings in her family, two brothers and one sister, all had one or more children.

First reported at a sectional meeting of the Department of Urology, Brady Foundation, Cornell Medical Center.

A uterosalpingogram showed tubal patency and normal conformation of the uterus. The basal metabolic rate was plus 7. Wassermann reactions of the blood were negative in both husband and wife and the other blood work, including tests with follicle stimulating and luteinizing factors, gave negative results. Urinalysis showed no evidence of disorder; hemoglobin was 95 per cent in the Sahli test, the red blood cell count 4,750,000 and the white blood cell count 6,700. The differential count was normal. A series of sedimentation rates taken over a period of several weeks showed no marked vacillation. Mrs. K. was normal in every way. The Huhner test showed viable spermatozoa in the cervical canal.

Mr. K. is a professor in a nearby university and is constantly subjected to the grueling effects of university routine. He had been constantly in harness during the eleven years of his married life. Mrs. K. herself is a college graduate, highly trained, and assists her husband in his research work. Their life is principally taken up with intellectual matters, although they play some tennis.

Having found nothing that would lead one to suspect it as the cause of the sterility, neither of them showing any manifestation of endocrine dysfunction, both being of normal weight and normal habits, there was only one factor for consideration—the question of devitalization with a resultant lowered fertility index to such a degree that fertilization could not occur; that is, if such a condition actually exists. With this in mind, the patients were subjected by their local physician to biweekly and then weekly ultraviolet irradiations between November 1935 and May 1936. The diet was also drastically altered, with incorporation of a great deal of raw vegetables, such as salads and grated carrots and beets, all sorts of raw fruits, raw onions sliced and boiled onions. Meats and salads were spiced with an unusual amount of condiments and garlic. In addition, fish was eaten three times a week and considerable crustacea. Both the husband and the wife retired at an early hour, and afternoon rests became a habit. In addition there was a large daily dose of irradiated ergosterol, and, for Mr. K., weekly doses of testicular extract administered intragluteally, in increasing doses. However, with all this rest and therapy, by May nothing had happened. The patients then consented to a change of environment. Forthwith they went for their three months summer vacation to England, spending it in a rural suburb of London, relaxing completely and enjoying their vacation. However, October 1936 showed no improvement. There was only one significant deviation from the original examination in that the motility index had increased from eighteen hours to twenty-one hours.

It was decided at this time that, with the wife's consent, if a sufficient number of volunteers could be found, to cross inseminate them with Mr. K's spermatozoa to determine definitely whether the spermatozoa were fertile or not. Children by Mr. K. would have been highly desirable, since he has an intelligence quotient of 140, which throws him into the genius group. During the next year and a half we were able, with the consent of the women and their husbands, who were sterile, to start these inseminations on sixteen women. It was with their consent and knowledge that the spermatozoa of Mr. K. were used, although in many instances his nationality, religion and aptitude differed markedly from those of the sterile husband. In the next six months period spermatozoa were obtained from Mr. K. and the patients were artificially inseminated monthly. No pregnancies ensued.

At the end of this time it was decided, and consent was received from the participants in the experiment, that I should now use a donor whose fertility index was known. A man with an intelligence quotient of 120 was chosen—a man who was already the father of two children and whose wife practiced birth control. He was an eminent figure in his profession. His wife was also a college graduate, a highly intelligent person. They both realized the importance of the experiment and gave their full hearted cooperation. The viability index of the donor's sperm was thirty-one hours. Because of the uncertainty of the exact time of ovulation, it was thought best to have four inseminations each month on the sixth, tenth, twelfth and fourteenth day of each intermenstrual period, the first day of the period being considered as one. The frequency of these inseminations and the thirty-one hour viability index of the donor's spermatozoa gave reasonable assurance that the sperm would overlap the periods between inseminations. Another factor that came up later was that subjects 8, 13 and 15 would not take between these periods. After eleven months it was decided in these three cases to alter the days, which may be seen in the accompanying table.

The sixteen volunteers and the wife of Mr. K. were artificially inseminated over the next fourteen months,

Results of Artificial Insemination

Case	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
Years married	11½	2	4	9	10	5	5	4	7	1½	5	18	6	6	8½	5	3	
Age	38	23	30	40	39	32	35	28	38	22	35	40	34	39	36	31	27	
Crossed with Mr. K's sperm on sixth, tenth, twelfth and fourteenth days of period, from October 1936 to March 1937																		
Pregnancies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
April 1937, second donor used	..	P.	..	..	..	..	..	..	..	..	P	..	..	..	..	..	P.	
May 1937	..	..	P	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
June 1937	..	..	..	..	..	..	..	..	..	P.	..	..	..	..	..	..	..	
September 1937	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	P.	..	
October 1937	P.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Inseminated 6th, 10th, 12th and 14th days
November 1937	..	..	..	P.	..	..	..	..	..	..	..	..	..	..	..	..	..	
December 1937	..	..	..	..	..	..	..	..	P	..	..	..	..	..	..	..	..	
January 1938	..	..	..	..	..	P.	..	..	..	..	..	..	..	..	..	..	..	
February 1938	..	..	..	..	..	..	..	..	..	..	..	..	..	P.	..	..	..	
March 1938	..	..	..	..	..	..	P.	..	..	..	..	..	..	..	..	..	..	
April 1938	..	..	..	..	P.	..	..	..	..	..	..	P.	..	..	..	..	..	
May 1938	..	..	..	..	..	..	..	..	..	..	..	..	P.	..	..	..	..	Inseminated 2d, 4th and 5th days
September 1938	..	..	..	..	..	..	..	..	..	..	..	..	..	..	P.	..	..	
October 1938	..	..	..	..	..	..	..	P.	..	..	..	..	..	..	..	..	..	
Sex of child born	♂	♂	♂	♂	♀	♂	♂	..	♂	♂	♀	..	..	♂	..	♂	♂	

when the rest of the volunteers, including Mrs. K., had become pregnant. The table shows the exact time at which each of the seventeen women became pregnant, the pregnancy being verified after the missing of the next monthly period and a positive Friedman reaction being obtained. The importance of this series is principally that motility of spermatozoa does not necessarily indicate fertility and that the retrieving of viable spermatozoa after coitus from the cervical canal does not exonerate the man as a cause of sterility.

The fertility index of spermatozoa may not be judged by conformity of the count per cubic centimeter, by ascertainable motility or by any of the other physical factors diagnosable by ordinary microscopic examinations.

53 East Ninety-Sixth Street

Clinical Notes, Suggestions and New Instruments

ROCKY MOUNTAIN SPOTTED FEVER WITH UNUSUAL FEATURES

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This is the report of a case of Rocky Mountain spotted fever, with observations made at autopsy, which is of unusual interest with regard to (1) mode of infection, (2) character and distribution of the rash, (3) lateness of appearance of the rash and (4) jaundice.

REPORT OF CASE

History.—M. F., aged 23, a white, married, unemployed American woman, admitted to Emergency Hospital June 7, 1938, complained of headache, chills and fever of four days' duration. She had been perfectly well until the afternoon of June 4, when she was taken with severe frontal headache and burning of the eyes. Shortly thereafter aching in her chest and legs and a slight cough developed. During the night she had a shaking chill followed by a rise in temperature and a drenching sweat. These symptoms continued, and the day before admission a decrease in auditory acuity, without earache, developed. The morning of admission she became nauseated and vomited and could not retain water. She stated that she had not been out of the city recently, had been drinking only city water and pasteurized milk and had eaten the usual cooked foods.

Her past and family histories were noncontributory.

It was later learned from the family that the patient had removed a tick from her husband about ten days prior to her illness. The husband, who was in good health, had recently hitch-hiked north from Florida.

Examination.—On physical examination the patient was well developed and fairly well nourished and was lying quietly in bed, alert and cooperative. The skin was hot and moist, and there was a suggestion of mottling over the abdomen (heat had been applied). Marked anterior flexion of the head elicited a slight pain down the back of the neck. There was moderate tenderness over the orbital rims; the scleras were clear; the nasal mucosa was injected; the lips were parched. The knee jerks were moderately hyperactive and there was an abortive ankle clonus. The Babinski and the Kernig sign were not present. The temperature was 103 F., respiratory rate 20, pulse rate 104 and blood pressure 115 systolic, 70 diastolic. The rest of the physical examination revealed no abnormalities.

Subsequent Course.—The patient continued to have a high fever, to have severe sweats and to grow progressively weaker. June 12, the ninth day of her illness, there were several petechiae in the conjunctivas and on the buttocks. June 13 there was a mottled maculopapular rash over the trunk, shoulders and upper parts of the thighs. By June 14 these areas had become petechial and were present on the upper arms. There was never any rash on the face, hands or feet. The lesions were discrete pinpoint to pinhead sized petechiae which did not fade on pressure. They were most numerous over the back and buttocks. On the day the petechiae were first seen, the patient showed decreased mental alertness, which progressed slowly to a stupor. On the morning of June 14 the scleras were icteric, and during the course of the day the skin became icteric. About 4 a. m., June 15, the patient became restless and anxious and went into coma, death following shortly thereafter.

The temperature ranged from 102 to 104 F. with occasional sudden drops to subnormal following severe sweats.

Examinations of the blood revealed: June 7: hemoglobin 90 per cent, erythrocytes 5,000,000 per cubic millimeter, leukocytes 7,550 per cubic millimeter with 98 per cent polymorphonuclears. June 13: hemoglobin 90 per cent, erythrocytes 4,470,000 per cubic millimeter, leukocytes 14,300 per cubic millimeter with 88 per cent polymorphonuclears. Agglutination of Bacillus proteus X 19 was positive in 1:80 concentration; of B. abortus, negative; of B. typhosus, negative and of B. paratyphosus A and B, negative. June 14: agglutination of B. proteus X 19 was reported negative by the United States Public Health Service. Spinal fluid June 7 and 12 showed 5 and 7 cells per cubic millimeter respectively. Blood culture, the Wassermann reaction, examination of the urine and x-ray examination of the chest were negative. June 14 guinea pigs were injected with the patient's whole blood and from them was isolated the virus of Rocky Mountain spotted fever. The virus conformed to the strain isolated from patients with the Eastern form of Rocky Mounain spotted fever.[1]

Autopsy.—This was performed by Drs. R. D. Lillie and T. L. Perrin of the United States Public Health Service.

Gross Appearance: The body was well developed. There was a general icterus of the skin, and numerous small petechial hemorrhages were present over the trunk, upper arms and thighs. The breasts appeared normal. On section there was a large hemorrhage in the left rectus muscle. The peritoneum was smooth and glistening. On the surface of the intestine were pinpoint sized hemorrhages. The visceral pleura was studded with pinhead sized hemorrhages over the left lower and right middle lobes of the lungs. There was a small amount of bloody fluid in the right pleural cavity. The visceral pericardium also showed numerous petechial hemorrhages.

The right ventricle of the heart was soft and distended with blood. The left ventricle was contracted. The valves were normal. There was marked congestion of both lower lobes of the lungs. The hilus nodes showed mild anthracosis. The spleen weighed 425 Gm. and was dark red and moist on section. The stomach contained some dark brown thin fluid, probably altered blood. The mucosa showed many pinpoint sized hemorrhages. The pancreas was normal. The liver was about normal in size. On section there was a slight yellow and brown lobular mottling. The gallbladder was moderately distended with very dark bile that could not be expressed into the duodenum. A probe could not be passed without making a false passage. No stones were found. The adrenals were normal. The size of the kidneys was normal. Many petechial hemorrhages were present in the pelvic mucosa. There was a small amount of blood in the uterine cavity. Several small hard white nodular tumors from 3 to 5 mm. in diameter were found in the ovaries. The bladder was distended with urine, which gave a yellow foam on shaking. The mucosa was studded with petechial hemorrhages. The mucosa of the intestine showed many petechial hemorrhages. The fecal material in the colon was clay colored.

Gross examination revealed: (1) petechial eruptions in the skin, in the serous membranes including the visceral pleura, pericardium and peritoneum and in the mucosa of the gastrointestinal tract, renal pelves and bladder; (2) icterus; (3) splenomegaly, and (4) congestion and edema of the lungs.

Microscopic Appearance: In the epicardium and myocardium and beneath the endocardium there were many small focal hemorrhages; also areas of vascular endothelial swelling, adventitial proliferation of fibroblasts and moderate perivascular

1. Performed by Dr. R. E. Dyer of the United States Public Health Service.

lymphocytic and monocytic infiltration. These conditions were more prevalent in the right ventricle.

The lungs showed areas of marked congestion with focal alveolar hemorrhage. In several areas there were changes typical of beginning pneumonia. In the large bronchi there were areas of focal hemorrhage and lymphocytic infiltration.

All the organs showed the vascular changes described in the heart. Other abnormalities were the following: In the ovaries one involuting corpus luteum was found. The small ovarian tumors noted in the gross examination showed markedly fasciculated proliferation of fibroblasts and fibrosis of the ovarian stroma. In the walls of the capillaries of the skin were clumps of Rickettsiae of coccoid, diplococcoid and occasional bipolar bacillary forms.

Levaditi preparations did not show any spirochetes in the liver, spleen, kidney or adrenal sections.

SUMMARY

This case of Rocky Mountain spotted fever presented several atypical conditions. The only known source of infection was from picking a tick off her husband. We do not know whether she mashed the tick in her fingers. Dyer [2] has traced the source of infection in several cases to mashing ticks between the fingers after removing them from dogs.

The rash, contrary to the usual distribution in Rocky Mountain spotted fever, appeared first and mainly on the trunk, never involved the distal half of the extremities and was petechial and discrete throughout. It appeared on the ninth day of the illness, whereas the usual time is from the second to the fifth day, and at the latest the seventh day. In many respects the rash was characteristic of that of typhus fever.

The jaundice, although reported on several occasions in the Western type of spotted fever, is not considered a complication of the Eastern form. Thus we found this case to be a diagnostic problem due to the atypical aspects.

17 Dupont Circle.

HEMATURIA, ABDOMINAL PAIN AND NITROGEN RETENTION ASSOCIATED WITH SULFAPYRIDINE

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Hematuria due to the administration of sulfapyridine has been observed in laboratory animals and also in man, though as far as we can determine no report on this subject has yet been published.[1] The label on the packages of this drug as recently released for distribution by at least two pharmaceutic concerns [2] contains a warning about this possible toxic effect. But the possible occurrence of acute abdominal pain in the form of renal and ureteral colic and the development of definite nitrogen retention in association with the hematuria is not mentioned. In view of the recent release of sulfapyridine for general use it seemed to us important that three cases showing these complications should be briefly reported even though the mechanism underlying their development has not been definitely determined. All three patients were under treatment in the Presbyterian Hospital, New York.

CASE 1.—A. R., a white man aged 40, was admitted Feb. 23, 1939, on the first day of a bronchopneumonia involving the left lower lobe, right lower lobe and right middle lobe. The sputum was loaded with type III pneumococci. Blood cultures were sterile. His past history was quite negative for urinary symptoms, and the admission urinalysis showed a specific gravity of 1.027, albumin one plus, and from 2 to 3 white blood cells per high power field (centrifuged) but no red blood cells or casts.

The patient was started at once on sulfapyridine orally, receiving 2 Gm. immediately, and then 1 Gm. every four hours for three and one-half days. Also he was given over the course of three days 200 mg. of antibody nitrogen of type III pneumococcus rabbit serum prepared by Dr. Michael Heidelberger. The blood level of free sulfapyridine was 2.5 mg. per hundred cubic centimeters February 24, 4.5 mg. February 25 and 2.5 mg. February 27. On this last day the dosage of the drug was reduced to 0.5 Gm. every four hours and on February 28 it was discontinued entirely, a total of 25.5 Gm. having been given. The patient's pneumonia was under control and he was virtually afebrile by February 25.

During the night of February 26 the patient began to complain of pain in the left lumbar region, which by the next morning had spread to the right as well. At first this was believed to be muscular and due to his position in bed. On the night of the 27th, however, very severe pain was experienced on the left, in character similar to renal colic and requiring large doses of codeine hypodermically for relief. At the same time it was noted that the urine had become smoky and that there was definite, bilateral, costovertebral angle tenderness with some spasm of the left lumbar muscles. Microscopic examination on the 28th showed the urine loaded with red blood cells, and the albumin was two plus, but no casts and only a few white blood cells were seen. That night the urine contained 30 mg. of free and 160 mg. of total sulfapyridine per hundred cubic centimeters. A small amount of this urine was centrifuged but no crystals were found in the sediment. Intermittent renal pain continued and abdominal distention became distressing.

March 1 the twenty-four hour urinary output was only 400 cc., as compared to an intake of 2,300 cc. No free sulfapyridine remained in the blood but there was 2.0 mg. of combined sulfapyridine per hundred cubic centimeters. In the urine total sulfapyridine had fallen to 90 mg. per hundred cubic centimeters, of which 15 mg. was free. Flat films of the abdomen revealed no radiopaque urinary calculi. The renal outlines appeared normal. The blood nonprotein nitrogen was 46 mg., and serum protein 6.3 Gm. per hundred cubic centimeters, of which 4.6 Gm. was albumin and 1.7 Gm. globulin per hundred cubic centimeters.

March 2 the patient did not void urine for fourteen hours and renal shutdown was feared. The blood nonprotein nitrogen had risen to 72 mg. per hundred cubic centimeters with a serum chloride level of 587 mg. per hundred cubic centimeters and a plasma carbon dioxide capacity of 45 volumes per cent. Catheterization, however, obtained 250 cc. of urine, and that night a spontaneous diuresis set in. By March 4 the blood nonprotein nitrogen had fallen to 49 mg. per hundred cubic centimeters. Intermittent renal colic continued, nevertheless, with occasional radiation to the groin, until March 7. Whereas it had been more severe at first on the left, for the last three days it was more marked on the right. Microscopic hematuria cleared progressively, and by March 10 only rare red blood cells were visible in a centrifuged specimen. Albuminuria never was more than two plus and in only one of five specimens examined were rare hyaline and finely granular casts seen.

Except for a very mild serum sickness from March 5 to 8 with arthralgia and a rise of temperature to 101 F., the patient's recovery was uneventful. March 14 there was a 65 per cent excretion of phenolsulfonphthalein.

CASE 2.—G. D., a schoolgirl aged 17 years, white, was admitted Feb. 10, 1939, for cough and night sweats of ten weeks' duration and pain in the right axilla for two weeks. Roentgenograms of the chest showed a shadow in the right middle lung field suggesting either interlobar exudate or a small patch of pneumonitis. The sputum was negative for tubercle bacilli and contained no culturable pneumococci. There was no history of previous urinary symptoms and the admission urinalysis was entirely negative.

February 18 the patient was started on sulfapyridine, receiving 2 Gm. as an initial dose and thereafter 0.5 Gm. every four hours. February 20 she had a transient attack of pain in the right lower quadrant. On the following morning the pain recurred and was accompanied by burning on urination. The

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2. Dyer, R. E.: Rocky Mountain Spotted Fever, Delaware State M. J. **6**: 52 (March) 1934.

The sulfapyridine used in these cases was supplied through the courtesy of Merck & Co.

From the Department of Medicine of the Columbia University College of Physicians and Surgeons, and the Presbyterian Hospital.

1. Since this note was submitted, two reports have appeared dealing with animal experiments:

Antopol, W., and Robinson, H.: Urolithiasis and Renal Pathology after Oral Administration of 2-Sulfanilyl-Aminopyridine [Sulfapyridine], Proc. Soc. Exper. Biol. & Med. **40**: 428 (March) 1939.

Gross, P.; Cooper, F. B., and Lewis, M. L.: Urinary Concretions Caused by Sulfapyridine, ibid., p. 448.

2. Lederle Laboratories Inc., New York, and Merck & Co., Rahway, N. J.

pain was constant, severe, and localized to the right lower quadrant. Physical examination showed generalized tenderness in the right lower quadrant with muscular spasm and rebound tenderness. Tenderness was maximal at McBurney's point but did extend up to the right costovertebral angle. At the same time the urine became grossly bloody. Surgical and gynecologic consultations were obtained, and the possibility of acute appendicitis was seriously debated. But because of the degree of hematuria and the costovertebral angle tenderness, conservative management was determined on. The sulfapyridine was at once discontinued, a total of 10.5 Gm. having been given. At this time the blood showed a level of 2.5 mg. of free and 6 mg. of total sulfapyridine per hundred cubic centimeters. Films of the urinary tract disclosed no evidence of radiopaque calculi, but on February 21 it was noted that the urinary sediment contained numerous crystals, the nature of which was unfortunately not determined. No casts were ever observed and the maximal urinary albumin was three plus.

By February 22 there was no free sulfapyridine in the blood and the abdominal symptoms had lessened. On the 24th neither symptoms nor signs remained, the urine was free from albumin, and only 1 or 2 red blood cells per high power field were found on centrifugation. The pulmonary shadow decreased rapidly in extent and the patient was discharged, asymptomatic, to a convalescent home on March 13 with the diagnosis of bronchopneumonia, causative organism unknown.

CASE 3.—M. L., a white woman aged 30, a housewife, was admitted Feb. 13, 1939, because of a sudden onset four days previously of chill, pleural pain, cough and bloody sputum. Physical examination showed lobar consolidation with a pleural effusion on the right, and x-ray examination confirmed these observations. Both sputum and blood cultures were positive for pneumococcus type I. The patient gave no history suggestive of urinary tract disease, and the admission urinalysis showed a specific gravity of 1.017, albumin one plus, and from 2 to 3 white blood cells and rare hyaline casts per high power field but no red blood cells in the centrifuged sediment.

The patient was given intravenously 100 mg. of antibody nitrogen of type I pneumococcus rabbit serum prepared by Dr. Michael Heidelberger and was started on sulfapyridine orally every four hours. The first two doses were of 2 Gm. apiece; subsequent ones were of 1 Gm. February 15 the right side of the chest was tapped and found to contain loculated seropurulent fluid that was positive on culture for type I pneumococci. The blood level of free sulfapyridine rose progressively from 2.8 mg. February 15 to 9.5 mg. February 20 and 11 mg. February 22 per hundred cubic centimeters. The total sulfapyridine in the blood was 12 mg. February 18 and 14 mg. February 20 per hundred cubic centimeters. By February 24 the patient had received a total of 52.5 Gm. and the drug was stopped. The following day the free sulfapyridine of the blood had dropped to 5 mg. and by February 28 the blood contained no free drug and only 2 mg. of the combined sulfapyridine per hundred cubic centimeters.

The course was stormy and the patient had numerous thoracenteses and on February 21 and February 26 received small blood transfusions without apparent reaction. From the 20th through the 22d the urinary output was noticeably small (an average of 225 cc. as contrasted with an intake of 3,000 cc.). On the morning of February 21 routine urinalysis revealed albumin two plus and 30 red blood cells per high power field. Examination of another specimen on the 23d gave the same results. From February 26 to 28 the patient complained of "pain in the back," but the exact location of this was not determined and it was presumed to be due to the empyema. It was noticed, however, that she was rather drowsy. A blood nonprotein nitrogen taken February 28 proved to be 125 mg. per hundred cubic centimeters. Fluids were forced and the blood nonprotein nitrogen fell to 95 mg. per hundred cubic centimeters March 3 and at the same time the urine became clear of red blood cells. March 23 the blood urea nitrogen was 9 mg. per hundred cubic centimeters.

A thoracotomy with rib resection and drainage of the empyema cavity was performed March 3. A bronchopleural fistula, however, subsequently developed but the patient remained free from all urinary symptoms and was finally allowed home April 26.

SUMMARY

Three cases of hematuria, one with visible blood, occurred in association with the administration of sulfapyridine and presumably were due to this drug. With two of them there was severe abdominal pain of renal and ureteral origin but in one instance simulating an acute appendicitis. Also in the two cases in which this determination was done there was a nitrogen retention due to renal insufficiency. All these manifestations cleared promptly when sulfapyridine was stopped and fluids were forced.

McCOLLUM TUBE FOR SINUS DRAINAGE

ESTEL BERTRUM MCCOLLUM, M.D., DETROIT

The object of the McCollum tube is to keep the patient dry when there is a large quantity of drainage from a sinus, such as a gallbladder, intestinal or suprapubic opening; to obviate the old form diaper drainage, permitting dry dressings at all times; to assure comfort for the patient, and to reduce the cost of dressings and nursing care.

The apparatus is simple and fool proof. It can be used in either the hospital or the home in which there is running water and may be operated by untrained attendants.

The tube, as illustrated in the accompanying sketch, is constructed of pyrex glass tubing. The opening (*A*) is placed inside the loop (*E*) so that it cannot come into contact with

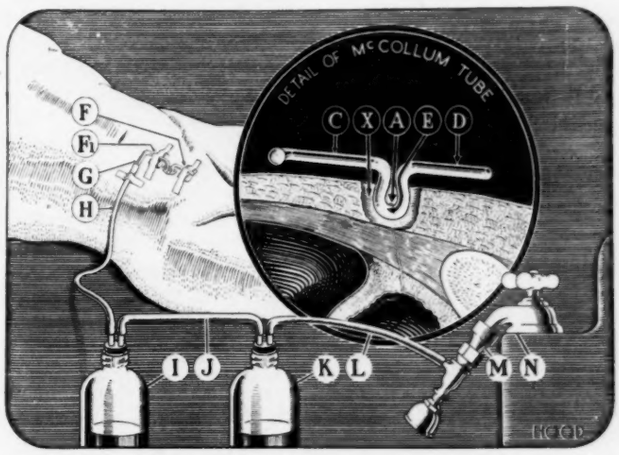

Diagram of operation of McCollum tube.

any tissue surrounding the sinus opening (*X*) and thus cannot at any time become plugged by the surrounding tissue. The ends *C* and *D* can be strapped to the abdominal wall so that loop *E* is held comfortably in place and maintains opening *A* at the proper level, which is regulated by pads of gauze *F* and F_1. The bent arm (*G*) is strapped to the abdominal wall and thus holds loop *E* so that it cannot turn laterally or become displaced. The rubber tube (*H*) is attached to arm *G* and runs to bottle *I*, in which the sinus drainage is collected for accurate measurement. Bottle *I* is connected by rubber tube *J* to bottle *K*, which is used to collect any kickback from the suction pump (*M*). Bottle *K* is then connected by any length of tubing (*L*) to a Penberthy suction pump (*M*), which is attached to the faucet (*N*).

The use of this tube reduces the care of the patient to the usual routine nursing care, keeps the patient comfortable at all times and makes it possible to keep an accurate record of the volume of fluid losses so that the fluid balance may be maintained, to collect bile when one wishes to return it to the gastrointestinal tract through a nasal tube or to collect fluid from a proximal loop of an ileostomy to be returned to the distal loop through a second tube by means of a rectal drip.

This tube may be made of glass, bakelite or metal.

10805 East Jefferson Avenue.

This tube can be obtained from G. A. Ingram Company.

A BEDSIDE METHOD FOR DETECTING DEXTROSE IN THE URINE

HERMAN L. JACOBIUS, NEW YORK

Benedict's test for dextrose in the urine can be simplified for practical bedside purposes by using the solution dried on a wad of asbestos and applied to the end of a wooden applicator.

Asbestos paper soaked in Benedict's solution is molded onto the end of a wooden applicator, again thoroughly moistened with the solution and then allowed to dry in air. The test is then carried out by dipping the end of the applicator into the urine or by merely allowing two drops of urine to fall on the end of the asbestos and then gently heating the urine-moistened asbestos over a noncharring flame (Bunsen, stove range, alcohol lamp). A yellow color develops, the intensity of which depends on the concentration of dextrose in the specimen.

A rapid method using asbestos paper and bismuth salts and requiring heat for completion has been devised by Mr. Harold Wright [1] of Forest Hills, N. Y., but this has the disadvantage of being rather cumbersome to make up. Recently the Denver Chemical Manufacturing Company has put out its "galatest" for rapid detection of dextrose in urine with the salts of bismuth. The latter test seems to be rapid and accurate and has the advantage of not requiring heat for its completion but the disadvantage of using caustic materials.[2]

In the manufacture of my asbestos applicators I have used standard Johns-Manville asbestos paper one thirty-second inch thick. The paper is cut into strips and soaked in Benedict's solution for twenty-four hours. At the end of this time pieces of the soaked paper about the size of an almond are molded on the end of wooden applicators, again moistened in the Benedict's solution and allowed to dry in air. Applicators thus made may be stored at least three or four months without loss of their sensitivity. In carrying out the test it is necessary to dip the asbestos tip of the applicator into the specimen of urine or apply two drops of urine, so that on the completion of the test a yellow line of demarcation is noted between the moistened and the unmoistened portions of the applicator if the test is positive.

Any source of heat that does not deposit soot on the surface of the asbestos may be used to carry out the test. It is important to avoid the direct heat of the flame to prevent charring.

The applicability and sensitivity of the method were tested by examining graded concentrations of dextrose in normal urine

Association of Color Gradations with Concentrations of Dextrose

Concentration	Color
3 per cent or more	Orange
From 1 to 3 per cent	Canary yellow
From 0.5 to 1 per cent	Greenish yellow
From 0.1 to 0.5 per cent	Faint yellow on a green background
0.07 per cent	No change

ranging from 0.6 to 5 per cent. In these experiments definite color gradations were associated with the concentrations of the dextrose given in the accompanying table.

The cost of the materials required for the test is minimal. The asbestos paper costs 10 cents a pound and the wooden applicators 10 cents a hundred. I have calculated the cost of a single asbestos applicator to be 0.4 cent.

Tests of diabetic urine of known dextrose concentration, determined by more elaborate quantitative methods, showed an agreement with the results obtained with the asbestos applicators close enough for ordinary clinical purposes.

At no time did various specimens of normal urine give a yellow color with the asbestos test. Approximately 100 samples of normal urine were tested, and none gave a false positive reaction. No other pathologic constituents of the urine, viz., blood and bile, interfere with the results of the test.

The applicators are as convenient to carry about as are tongue depressors, and both the physician and the patient are able by this rapid, inexpensive test to determine the approximate concentration of sugar in the urine within one minute.

Cooperation was given the author by Dr. Eugene F. Du Bois and Dr. Gustave I. Steffen.

From the New York Hospital and Department of Medicine, Cornell University Medical College.

1. Wright, Harold: Personal communication to the author.
2. Dr. Albert Seaton of Indianapolis has devised a test using copper salts and heat, but the manufacture of his device is rather costly.

Council on Physical Therapy

THE FOLLOWING ARTICLE HAS BEEN ADOPTED BY THE COUNCIL FOR PUBLICATION. THE COUNCIL EXPRESSES ITS APPRECIATION TO THE CONSULTANTS APPOINTED TO AID THE COUNCIL IN THIS INVESTIGATION FOR THEIR VALUABLE ASSISTANCE, TO THE NATIONAL BUREAU OF STANDARDS FOR ITS COOPERATION, AND TO THE AUTHORS FOR THE PREPARATION OF THIS REPORT.

HOWARD A. CARTER, Secretary.

RADON SEEDS

PHYSICAL CONSIDERATIONS: DO THEY LEAK AND DO THEY IRRITATE TISSUES?

EDITH H. QUIMBY, M.A.
NEW YORK
AND
ARTHUR U. DESJARDINS, M.D.
ROCHESTER, MINN.

PHYSICAL CONSIDERATIONS

A short time after radium was discovered, it was found that objects in the neighborhood of open radium preparations acquired a radioactivity of their own. This activity was very short lived if the object was removed from the vicinity of the radium but could be renewed at will by bringing it back.

This mysterious phenomenon is readily explained when the sequence of radioactive changes is known. Radium itself is a metal, belonging to the same chemical group as barium and calcium. The nucleus of the atom is, however, unstable, and at some (entirely unpredictable) time it suddenly ejects a portion of itself. This portion, which is called an alpha ray or alpha particle, is exactly like the nucleus of a helium atom. In any given quantity of radium, every instant a certain percentage of all the atoms present undergo this transformation, the rest remaining completely unchanged. The apparent result of this is that the quantity of radium present gradually decreases. But it must be remembered that this gradual decrease is the result of a series of sudden transformations.

When a radium atom has ejected an alpha particle, what is left behind is no longer radium but a new element, radon. This element is a gas, belonging to the same chemical family as helium. Being a gas, it need not remain with the radium atoms but can float away, remain for some time in the air or settle on some object. Radon is itself unstable. At some (also unpredictable) time after its formation, the radon atom expels an alpha particle. The residual atom is known as radium A and is another metal, belonging to the chemical group of selenium and tellurium. These metallic atoms settle on any nearby object, forming a film so thin as to be invisible. They, in turn, eject alpha particles, and this alpha radiation naturally appears to come from the object on which the radium A has settled; this is the "acquired radioactivity" mentioned in the first paragraph. When radium A disintegrates, its product is

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Special report prepared for the Council on Physical Therapy of the American Medical Association partly as a result of a special investigation to determine the question of leakage.

another solid, as are all the subsequent ones. This element, called radium B, belongs to the same chemical family as lead.

Radium B disintegrates in a different manner from the preceding elements; it ejects an electron, known as a beta ray, or beta particle. Accompanying this particle are rays of the same sort as roentgen rays; these are called gamma rays. The next substance, radium C, emits all three types of rays in its disintegration.

It is evident that these radioactive substances are arranged in a family, or series. As a matter of fact, three such series are known, but only this one is of much practical importance in radiation therapy. This is called the uranium series, since its first member is uranium. Radium is the seventh member; for the present purpose its ancestors are of little significance. The part of the series which has been discussed, and which is all that is of interest in radiotherapy, may be condensed in a diagram as in figure 1.

Each member of the series is a true chemical element. It enters into combinations with other elements in accordance with the chemical group to which it belongs. Every one has its own characteristic manner and rate of disintegration, which for any given substance is always the same and is not influenced either by the chemical combination in which it exists or by the action of physical agents (such as heat and cold).[1]

The three types of rays differ greatly in their penetrating powers. The alpha rays, which are helium nuclei traveling at high speeds, cannot penetrate to any appreciable distance in solid matter; in fact, they are all stopped by an ordinary sheet of paper. Evidently they may be ignored in radiation therapy. The beta rays, electrons traveling at considerably greater speeds than the alpha rays, are more penetrating. Many of them will pass through several millimeters of tissue; they are all stopped by 2 mm. of brass or 0.5 mm. of platinum or gold. They are of use in therapy only for extremely superficial conditions. The gamma rays are, like roentgen rays, electromagnetic radiations traveling with the speed of light, and they are very penetrating. Some of them can pass through several inches of lead. They are the ones which must be used to affect cells at distances of more than a few millimeters in tissue.

The problem of radiation therapy is to deliver a sufficient quantity of radiation to the cells it is desired to affect, without at the same time producing undesirable effects on other tissues. In radium therapy this implies an adequate amount of gamma radiation.

As stated, no gamma radiation is produced by radium itself or by its immediate descendants; the gamma rays come from radium B and radium C. If, however, the radium is in a sealed container, its decomposition products will accumulate there with it and their radiation can be attributed to it. If, on the other hand, the arrangement is such that the radon atoms can drift away (or be pulled away) as fast as they are formed, the radium would be seen to emit only alpha rays. Similarly, if radon is sealed into a tube so that its descendants must also remain there, their radiation can be attributed to it. It is evident that, as far as the available radiation is concerned, it makes no difference which is used; in either case it is the later members of the series which actually produce the useful rays.

1. For a detailed discussion of radioactivity, radioactive series and radioactive constants the reader is referred to standard works on the subject. Among these are:
Rutherford, Ernest: Radioactive Substances and Their Radiations, Cambridge University Press, 1912.
Rutherford, Ernest; Chadwick, James, and Ellis, C. D.: Radiations from Radioactive Substances, New York, Macmillan Company, 1930.
Glasser, Otto, editor: The Science of Radiology, Springfield, Ill., Charles C. Thomas, Publisher, 1933.

Radium loses its activity very slowly. Of any given amount, half will have disintegrated in 1,590 years, or only a small fraction of 1 per cent a year. Of radon, however, half will have disintegrated in 3.82 days (16.6 per cent in one day). Of the half remaining, one half will disintegrate in another 3.82 days; of the amount now remaining (one fourth of the original amount) half will be lost in another equal period, and so on. It is evident that, whereas a supply of radium would be practically constant during one man's lifetime, a supply of radon would vanish very rapidly unless it was replenished. If, however, the radium could be put in a safe and allowed to remain there, and the radon drawn off every day, a continuous supply of active material would be assured. The radium would not be in danger of loss or theft; the loss of some radon would not be serious because the next day a fresh supply would be available.

There are other advantages in using radon. An amount of radium is specified in terms of grams (or milligrams) of radium element present in any given preparation. The amount of radon having the same gamma ray activity (actually whose descendants are the same) as 1 Gm. of radium is called 1 curie; the amount corresponding to 1 mg. of radium is 1 millicurie. One millicurie of radon can be compressed into much less space than 1 mg. of radium, so that radon sources can be made much smaller than radium ones of the same strength. Moreover, if the radon is removed each day

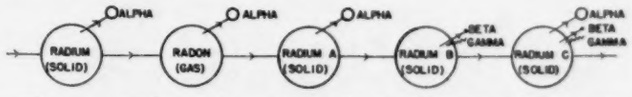


Fig. 1.—A portion of the uranium series of radioactive substances, showing those elements which are important in radiation therapy.

from the radium source it can be put into tubes or containers of various sizes and shapes, so that a variety is always on hand.

As soon as a radon source is separated from its parent radium it begins to deteriorate, as already stated, at the rate of 16.6 per cent daily. The day a source is prepared, its strength is measured by comparing its gamma ray activity with that of a known amount of radium sealed in a permanent tube.[2] Thereafter its strength can be calculated at any time, since its hourly and daily rate of loss is known. Practical tables have been developed for this purpose. The effective lifetime of a source depends on its initial strength and on the purposes for which it is used.

In practice, the actual separation of radon from radium requires the use of complicated physical apparatus and the services of a trained technician. The appearance of such an apparatus is shown in figure 2. The radium, in the form of a solution of radium chloride, is kept in the safe. Glass tubes connect the flasks containing the solution with the apparatus; a vacuum is maintained in the whole system. At the time of the collection of the radon, by manipulating the vacuum pumps and the mercury in the various flasks the operator forces the radon gas which has accumulated above and in the radium solution into the part of the apparatus marked *A*, where it is purified. The impurities consist mainly of water vapor, hydrogen and oxygen, all of which have come from the solution. When they have been removed, the radon remaining occupies an extremely small volume. It is then pumped

2. A description of such measurements would be out of place in the present report. They are carried out by means of special electrical instruments developed for the purpose, which must be available in any institution where radon sources are prepared.

to the region above the stopcock marked *B*. At this point the metal or glass containers to be used will have been previously sealed on, and the radon can be forced into them. The filled containers can then be removed, measured and prepared for therapeutic use.

When the radon is enclosed in the usual type of thin glass tube, the rays emitted from the tube consist of about 96.5 per cent beta and 3.5 per cent gamma. If this tube is embedded in tissue, 97 per cent of the total radiation emitted is absorbed in the centimeter of tissue immediately surrounding it. Only 3 per cent of the initial radiation penetrates 1 cm. of tissue; this is mainly gamma radiation.

If the glass tube is enclosed in 0.5 mm. of platinum, all of the beta and some of the gamma rays will be absorbed in this metal; the radiation emitted from the surface of the platinum tube will be only 2.77 per cent of that from the glass tube, but it is all gamma radiation.

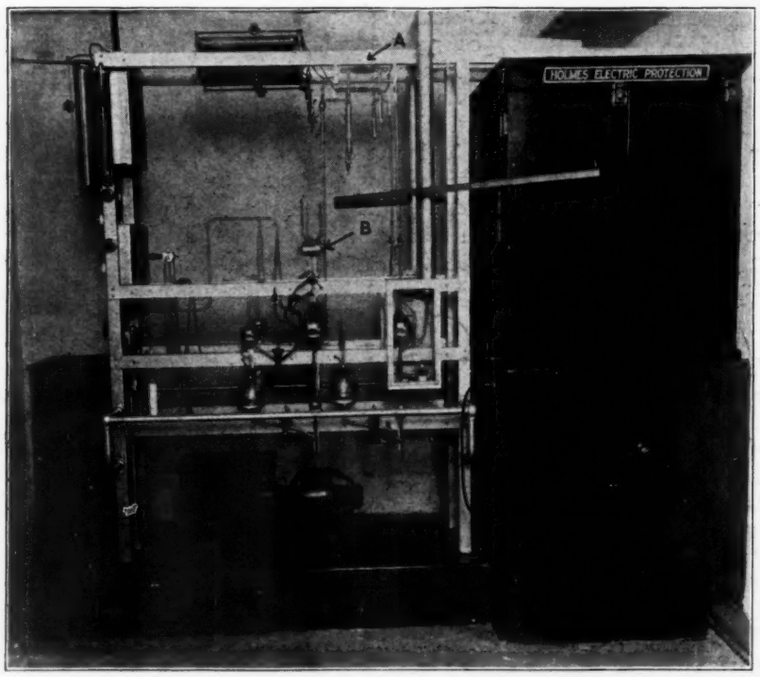


Fig. 2.—Apparatus used at Memorial Hospital for the separation of radon from radium.

Of this, 6 per cent is absorbed in the centimeter of tissue immediately surrounding the tube; 94 per cent penetrates to more distant cells (in contrast to only 3 per cent for the glass tube). Ninety-four per cent of 2.77 is 2.62. In other words, when the half millimeter platinum tube is used, 2.62 per cent of the initial radiation reaches cells at more than a centimeter distance, as compared with 3 per cent for the glass tube alone. But in the latter case (glass) the tissue surrounding the tube has to absorb the other 97 per cent, whereas in the former (platinum) they were absorbed largely in the tube itself.

Evidently with the glass tube, in order to deliver an adequate dose at a distance of a centimeter in tissue, an excessive dose must be administered to the region close about the tube. When the metal is employed it absorbs the oversupply of beta rays, and the nearby tissues do not suffer so greatly. This process of removing undesirable radiation by the use of metal covers for radium (or radon) sources is called filtration. It is a factor deserving of great consideration when radioactive sources are implanted directly into the tissues (interstitial irradiation).

A factor of even greater importance is the distance from the source.[3] The intensity of radiation falls off very sharply at a short distance from the tube because of the spreading of the rays, the well known inverse square law. The extreme effectiveness of this law in interstitial irradiation may readily be illustrated. Consider an implant[3] so small as to be practically a point source of radiation; the rays are emitted from it in all directions. All of them except those absorbed in the first 5 mm. of tissue pass through the surface of a sphere at this distance (5 mm.) from the source. The area of this sphere is 3.14 sq. cm. ($4 \pi r^2$). All the rays which pass through this sphere, except those absorbed in the next 5 mm. of tissue, must also pass through a spherical surface at 1 cm. from the source. The area of this outer sphere is 12.56 sq. cm., which is just four times that of the inner one. The same amount of radiation must hence be spread out over four times the area, so that any particular cell or group of cells at the larger distance receives only one fourth as much radiation as it would at the smaller.[4] At 1.5 cm. it would receive only one ninth as much. It is apparent that cells at any great distance from an implant will receive a very much smaller dose of radiation than those close to it.

This decrease in intensity by virtue of the inverse square law is completely independent of the absorption of radiation by the tissue referred to. The statement that 94 per cent of the radiation from a half millimeter platinum tube penetrates to a distance of a centimeter in tissue must not be interpreted as meaning that the intensity at 1 cm. distance is 94 per cent of that at the surface of the implant. This 94 per cent is spread out so that it covers an area many times the area covered by the total radiation at the tube surface, so that the actual intensity (radiation per unit area) at 1 cm. is an extremely small fraction of that at the surface of the tube. It is evident that for filtered radiation the effect of distance on the intensity is much more important than that of absorption in the tissue. These effects of filtration and distance will be referred to later, in connection with the practical application of radon in interstitial therapy.

The first actual treatment of a tumor by the insertion of radium directly into it appears to have been done by Dr. Robert Abbé in New York in 1905. He made a surgical incision into an exophthalmic goiter, placed the tube in it, and left it for twenty-four hours. Following his report of this case, others used the method for some time. Their applicators were all bulky; little effort had been made to limit their size. Stevenson and Joly took a great step forward when they utilized radon (at that time called radium emanation). This they could introduce into very fine glass tubes, which could in turn be placed in fine hollow steel needles. These were inserted into the mass to be treated and

3. The "source" of radiation is its point of origin; in the case of radioactive substances it is the actual radium or radon. It is sometimes customary to refer to the tube containing this material as the source. When this is done, it must be remembered that only the portion of the tube or needle which actually contains radioactive material (the "active portion" or "active length") can thus be considered. An "implant," as considered in this article, is any tube, needle, cell or other container of radium or radon inserted directly into the tissues. The method of inserting the gold seeds considered in the present report is outlined later.

4. Actually they receive less than one fourth, because of the decrease due to absorption in the intervening tissue.

were removed after a suitable time. The advantages of these needles were so apparent that efforts were immediately directed toward reducing the size of the radium containers, and shortly radium needles were available which were quite small.

Meantime, Duane had suggested that small amounts of radon might be put into tiny glass tubes, and these inserted directly into the tissues by means of a trocar and cannula and left there permanently. Since the radon would disintegrate at the rate of about 16 per cent of the amount present every day, at the end of a month less than 1 per cent of the initial amount would remain. The glass tubes would be sterile and harmless and need no further attention. This idea appealed to Janeway, who wished to test it at the Memorial Hospital. Failla accordingly developed a method for making the glass capillaries very fine and small. Janeway called these tiny implants "bare tubes" and used them successfully over a period of several years.

The method had many advantages over the use of the clumsier removable implants, but it had one great disadvantage. An intense necrosis developed around each implant. This was sometimes responsible for great pain and for the breakdown and slough of the tissues. The foregoing discussion of filtration makes it evident that this was mainly due to the effect of the beta rays and that if they could be removed the situation should be improved.

As a matter of fact, Regaud and his associates, using small platinum needles thick enough to remove the beta rays, and with small radium content, so that prolonged irradiation was necessary, were obtaining good final results with little or no necrosis. It was apparent that, if a filter could be used with the permanent implants, much of the difficulty due to the necrosis could be eliminated.

Various schemes were tried to accomplish this purpose. Heublein attempted to surround each tube, as it was implanted, with a suitable thickness of bismuth paste, using the same needle for the radon and the paste. Preliminary results were unsatisfactory because the distribution of the paste was irregular. The work was abandoned because of the development of more satisfactory methods.

Failla had tried making bare tubes of lead glass, which would absorb more of the beta rays than ordinary glass. However, the thickness of the material required to remove most of the beta rays was so great as to make the tubes unsatisfactory for interstitial use. He accordingly turned his attention to the problem of a metallic tube. The metal should be one with a very high absorbing power, so that the tube walls could be thin. Practically this limited the choice to platinum, gold and iridium. Of these, gold is the least expensive and it has an additional advantage which actually makes its use practical. Pure gold is quite soft, so that if a tube of fine bore is pinched together with a blunt pair of pliers a gas-tight seal will be formed. The problem of sealing gold tubing to the glass radon collecting apparatus had to be solved, but a simple means for doing this was developed.

Implants of this type should be as small as possible. As already stated, a wall thickness of 0.5 mm. of gold is required to remove all the beta rays. To use this would result in an implant having about three times the diameter of the glass seeds. It was felt that a compromise would be desirable whereby the diameter could be kept smaller but a favorable percentage of the beta rays removed. A filter of 0.2 mm. of gold transmits 3.72 per cent of the bare tube radiation; of this about a fourth is beta radiation. One of 0.3 mm. gold transmits 3.16 per cent of the original; of this less than one tenth is beta. As stated previously, one of 0.5 mm. gold transmits 2.77 per cent of the original radiation, all gamma. After traversing 1 cm. of tissue, in this last beam there will be 2.62 per cent of the original radiation; in those filtered by 0.2 and 0.3 mm. of gold there will remain 2.80 and 2.73 per cent respectively. This means that, in the case of the radiation filtered by 0.2 mm. of gold, 25 per cent has been absorbed in the first centimeter of tissue, of that filtered by 0.3 mm. 14 per cent, and of that filtered by 0.5 mm. 6 per cent. These data are presented in table 1. From the point of view of these figures, the 0.3 mm. gold filter seemed a reasonable and satisfactory compromise. However, various physical, chemical and biologic experiments were performed with gold tubes having walls of 0.2 and 0.3 mm. in order to ascertain which gave the better combination of small size and reasonable filtration.

The first pure gold tubing used had a bore of 0.2 mm., but this was found to be larger than necessary. A bore of 0.1 mm. was practical, but in general a bore of 0.15 mm. seems most satisfactory. Hence tubes of 0.3 mm. wall and 0.15 mm. bore, making a total outside diameter of 0.75 mm., were finally adopted.

TABLE 1.—*Data Regarding Gold Filters*

Mm. Gold Filter	Percentage of Total Radiation	Percentage Beta	Percentage Gamma	Percentage of Total Radiation Passing Through 1 Cm.	Percentage of Total Radiation Absorbed in First Centimeter
0	100	96.5	3.5	3.14	97
0.2	3.72	22.5	77.5	2.80	25
0.3	3.16	8.8	91.2	2.73	14
0.5	2.77	0	100	2.62	6

A detailed discussion of the extensive experimental work would be out of place here; the interested reader is referred to Failla's original paper.[5]

The "gold seeds" as actually used are about 4 mm. long and contain from 0.5 to 3.0 millicuries of radon. They can be sterilized by boiling. In no case has any significant leakage of radon been detected after boiling for one hour. The possibility of a seal's opening under pressure from the needle as the seed was inserted was tested by injecting a number of them into pieces of tough meat and later recovering them. During this process they were deliberately handled much more roughly than they would be in therapeutic practice. When they were remeasured after recovery, and subsequently, no evidence of a seal's opening was obtained in any case.

It seemed possible that the chisel-like ends of the seeds might be objectionable. Various schemes have been tried for rounding the ends, not one of which has proved entirely satisfactory. Meantime, repeated roentgenograms of some patients, made over periods of years, have demonstrated that the seeds remain in place. At the Memorial Hospital, where the method has been used for more than twelve years, there has been no complaint of trauma from these edges.

The question of the disposition of the implants, permanent or removable, seeds or needles, in the tissues is extremely important. The variations in intensity of radiation due to the inverse square law have already

5. Failla, Gioacchino: The Development of Filtered Radon Implants, Am. J. Roentgenol. **16**: 507-525 (Dec.) 1926.

been explained. Because of these variations, the distribution of radiation throughout an implanted mass of tissue must evidently be very uneven. It seems advisable to present some numerical data on this point. In table 2 are shown intensities of radiation at different distances from a point source in percentages of the intensity at a distance of 2 mm. from it. In table 3 are shown the variations in intensity at a point half way between two implants as the distance between

TABLE 2.—*Effect of Distance on Intensity of Radiation*

Distance from Point Source, Mm.	Percentage of Intensity of Radiation*	Distance from Point Source, Mm.	Percentage of Intensity of Radiation*
2	100	8	6
3	44	10	4
4	25	12	3
5	16	15	2
6	11	20	1

* Neglecting absorption in tissue.

them is increased. In both of these tables the absorption of the radiation in tissue is neglected; it would act to make all the values somewhat less. Gold seeds are so small that point source data apply fairly closely. For longer implants, the inverse square law is not strictly applicable; the variations with distance are not so great, although still large. Data for making the proper allowances for the effect of length are available in the literature.[6]

From the data of tables 2 and 3 it is evident that, if the implants are too widely spread, either regions between them will be underirradiated or regions close around them will be overtreated. At best, the distribution of radiation is bound to be uneven. It must be considered that the reaction of cells which receive the least dose is the most important. If these react satisfactorily, others receiving greater doses should also. Hence, in planning treatment of a tumor, the amount of radiation required to deliver at least a certain minimum dose throughout should be ascertained. In order to implant a lesion properly, its dimensions must be known as accurately as possible and an adequate number of seeds or needles prepared so that the desired minimum dose can be delivered as uniformly as possible. Certain rules must be followed in placing the radioactive sources within the lesion.

TABLE 3.—*Effect of Spacing of Implants on Dosage in Intervening Tissue*

Distance Between Implants, Mm.	Radiation Halfway Between*	Distance Between Implants, Mm.	Radiation Halfway Between*
4	200	12	22
6	88	16	12
8	50	20	8
10	32	25	6

* Assuming 100 per cent as the amount delivered at 2 mm. from a single point source, as in table 2.

A great deal of work has been done on proper methods of delivering desired doses in interstitial therapy (implantation of radon). It is not felt that data of this kind should be incorporated in a report such as the present one. The reader who wishes such information is referred to the original papers.[6] However, it cannot be too strongly emphasized that a knowledge of the size of the mass and the amount of radon (or radium) required is only the beginning of adequate treatment. Proper training in the technic of implantation is essential, as well as experience in the method. Most important of all is sound clinical judgment in determining the method of choice in any given instance.

These points may be illustrated by the diagram of figure 3. In both parts the heavy black line represents the outlines of a lesion 2 cm. in diameter; it has been ascertained that it can be correctly treated with four seeds placed 1 cm. apart as shown in the left hand figure. (The entire diagram is drawn to the same scale.) A margin of safety all around the lesion receives adequate dosage. In the right hand figure, three of the seeds have been displaced, each by less than 0.25 cm. Now a part of the actual lesion is outside the 100 per cent zone, and the margin of safety is meaningless. It is obvious that neither the size of the mass nor the positions of the implants can be determined with any such degree of accuracy as is supposed in the first diagram. Accordingly, it is necessary for the clinician to decide how much leeway he must leave in deciding his dose, and how much irregularity he may permit himself in implanting his sources, and then to be sure that he does not overstep the limits he has set.

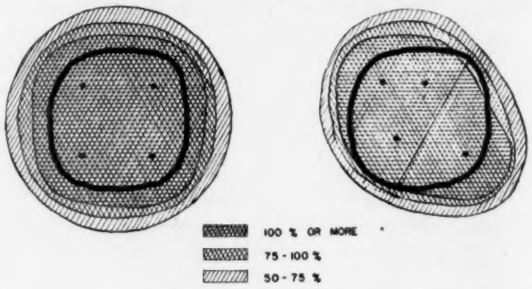


Fig. 3.—Diagram to illustrate the importance of accurate placing of sources in interstitial radiation therapy.

REPORT OF INVESTIGATION ON LEAKAGE

For many years, as far as supervision by any of the councils of the American Medical Association is concerned, all matters pertaining to and all advertising of radium and preparations of radium in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION came within the purview of the Council on Pharmacy and Chemistry. The Council on Physical Therapy had not then been organized. It was during this period that therapeutic radiologists became aware that the use, by implantation into tumors or tissues, of sealed segments of capillary glass tubing containing varying amounts of radon had the serious disadvantage of causing a zone of tissue in the immediate vicinity of these glass-radon implants[7] to undergo necrosis and, as a consequence, of inducing more or less severe pain in any region treated by this method. The necrosis and the resulting pain were due to the insufficient filtration, which allowed all the gamma rays and a considerable proportion of the beta rays as well to escape from the glass containers. As the beta rays are readily absorbed, they exerted their effect indiscriminately on all the cells surrounding the glass seeds to a depth of several millimeters and thus accounted for the necrosis and the pain. In order to obviate this difficulty it was essential to filter the radon sufficiently to eliminate all the beta rays and perhaps also the least penetrating fraction of the gamma

6. Quimby, Edith H., and Martin, H. E.: A Basis for Dosage Determination in Interstitial Irradiation, Am. J. Roentgenol. **21**: 240-249 (March) 1929. Quimby, Edith H.: Physical Factors in Interstitial Radium Therapy, ibid. **33**: 306 (March) 1935. Paterson, Ralston, and Parker, H. M.: A Dosage System for Interstitial Radium Therapy, Brit. J. Radiol. **11**: 252-266 (April), and 313-340 (May) 1938.

7. Because of their small size, these sealed segments of capillary glass tubing containing radon had long been generally known as "radon seeds."

rays. Experiments carried out by Lacassagne [8] in 1921 showed that, when plain glass seeds containing radon were embedded in a mass of tissue, the effect was to cause all the tissues surrounding each seed to undergo necrosis for a distance of from 1 to 8 mm. from the seeds. Moreover, for seeds containing from 0.7 to 26 millicuries or more of radon the final diameter of this zone of necrosis was proportional to the amount (or strength) of radon in each seed. When, instead of glass, the seeds were made of segments of fine platinum tubing with a wall 0.15, 0.30, 0.40 or 1 mm. thick and contained the same quantity (or strength) of radon, the thickness of the resulting zone of necrosis diminished as the thickness (and therefore the filtering value) of the platinum increased. Thus platinum seeds with a wall thickness of 1 mm. and containing 10 millicuries of radon did not cause necrosis, while with similar seeds containing 20 millicuries of radon the resulting zone of necrosis was 2 mm. thick, and with seeds containing 34 millicuries of radon the zone of necrosis was 5 mm. thick. The results subsequently obtained by Cutler [9] and by Quimby and Stewart [10] corroborated those of Lacassagne on the whole, although they showed slight variations in detail which related mainly to reparative changes occurring later in the zone of tissue affected by irradiation under the conditions of the experiments. According to these workers the diameter of the necrotic zone produced by radon seeds embedded in tissue is not proportional to the quantity of radon in the seeds.

The idea of making radon seeds of metal such as platinum in order to filter out the beta rays and some of the gamma rays had occurred to Regaud at least as early as May 1919, because at that time he applied for and obtained from the French government a patent to cover and protect a method of making radon seeds by pinching off and clipping short segments of fine platinum capillary tubing into which a certain quantity of radon had been pumped. With two exceptions, this is essentially the method which has been employed almost universally ever since. One exception refers to a method devised and patented by an American company, whereby sealed glass seeds are inserted into a small capsule of platinum with smoothly rounded ends. The advantages claimed for this method of preparing metal seeds are that the possibility of leakage is obviated and that the smooth ends of the seeds avoid possible mechanical irritation to tissues which, theoretically at least, might be caused by seeds with ends of metal. The other exception is that, in this and certain other countries, gold tubing has generally been used instead of platinum tubing.

At about this time and as a result of competition between two commercial concerns in this field, a considerable advertising controversy arose and was waged for some time. The company which had devised and patented a method of preparing radon seeds by first sealing the radon in segments of capillary glass tubing which were then placed in small platinum capsules with smoothly rounded ends naturally made the most of the theoretical rather than practical advantages of this method. The implications were that (1) radon seeds prepared by pinching off and clipping segments of metal tubing could never be free from the possibility of leakage and that their use, therefore, must be fraught with uncertainty as to dosage unless repeated physical measurements of their radon content should be made, and that (2) the pinching off method must necessarily result in ragged ends, which must irritate tissues into which seeds thus prepared should be implanted, whereas the smoothly rounded ends of radon seeds prepared by the patented method employed by this company could not possibly irritate the tissues. The first argument will not be considered now but will be dealt with later. As for the second contention, that the "pinching off" method leaves jagged ends which must irritate the tissues, this can be easily shown to be at least an exaggeration which could mislead only persons who are not familiar with the details and methods of radium therapy.

TABLE 4.—*Results of Measurements of "Pinched Off" Gold Seeds from One Company*

Number of Seeds	Claimed Value	Measured Value	Percentage of Claimed Value
3	3.0	2.96	98.7
5	5.10	4.96	97.3
5	5.0	4.87	97.4
5	5.10	4.97	95.5
5	5.30	5.25	99.1
3	3.09	2.94	95.2
4	4.0	3.73	93.2 Leaked
4	6.0	5.89	98.2 Leaked
3	4.5	4.58	101.7
5	10.4	10.09	97.0
5	10.0	9.64	96.4 Leaked
5	10.2	10.02	98.2
5	10.10	10.06	99.6
5	10.30	9.61	93.3
3	9.15	9.28	101.4
	Platinum Seeds from Another Company		
3	3.12	2.43	78.0
5	5.25	4.45	94.8
5	6.85	6.07	88.6
5	5.95	4.79	78.8
5	5.10	4.41	86.5
3	3.93	5.13	130.6
4	4.48	3.47	79.7
4	6.38	4.87	76.4
3	4.59	4.54	98.9
5	10.5	9.97	95.0
5	10.12	10.36	102.0
5	10.45	10.17	97.3
5	10.55	8.25	78.2
5	10.10	12.37	122.3
3	9.0	8.48	94.2

Of the total number of seeds from one company, the following show leakage as indicated:

	Leakage in Percentage of Total Content	
	Before Boiling	After Boiling
Lots of 4 seeds of 1 mc. each.....	0.01	0.02
	0.02	1.0 approx.
	0.01	0.02
	1.0 + approx.	6.0 approx.
Lots of 4 seeds of 1.5 mc. each.....	0.014	0.009
	0.016	0.010
	0.023	0.012
	0.016	0.009
Lots of 5 seeds of 2.0 mc. each.....	0.017	0.018
	.....	.....
	0.035	0.032
	0.036	0.035
	0.021	0.50

There was no marked leakage from the seeds from the other company.

When radon, either in bare glass "seeds" or in metal "seeds," is embedded in the living tissues of a patient, the first step usually is to inject a local anesthetic if the lesion to be treated is small, or to put the patient under the influence of a general anesthetic if the lesion is large. Then, after the physical pattern according to which the units of radon ("seeds") are to be distributed and arranged within and around the lesion has been decided on, a number of small slit incisions are made in the skin or, such incisions being dispensed with, a

8. Lacassagne, Antoine: Recherches expérimentales sur l'action des rayonnements B et r du radium agissant dans les tissus par radiopuncture, J. de radiol. et d'electrol. **5**: 160-173 (April) 1921.

9. Cutler, Max: Comparison of the Effects of Unfiltered and Filtered Radon Tubes Buried in Rabbit Muscle, Am. J. Roentgenol. **16**: 535-543 (Dec.) 1926.

10. Quimby, Edith H., and Stewart, F. W.: Comparison of Various Sources of Interstitial Radiation, Radiology **17**: 449-470 (Sept.) 1931.

long hollow needle of large bore, similar to a lumbar puncture needle, or a fine trocar, is inserted into one of the planes of the lesion. A glass or metal seed containing a certain quantity of radon is then placed in the outer end of the lumen of the needle and is allowed to slide down the lumen until it reaches the far end of the needle lying within the lesion. Then a fine metal rod with a diameter corresponding to the bore of the needle or trocar is pushed down the lumen until it comes in contact with the seed. The next move is the crucial step as far as mechanical irritation of tissue by the seed is concerned. If from this point the seed were forced out of the needle by pressure on the mandrel, as is somtimes done, this maneuver might give a semblance of justice to the argument that seeds prepared by the "pinching and clipping" method irritate the tissues in which they are embedded. Even then, however, the small size of the seeds could hardly cause sufficient irritation of tissues to be of any consequence. Proper technic, however, does not countenance such a procedure. Sound technic requires that, once the

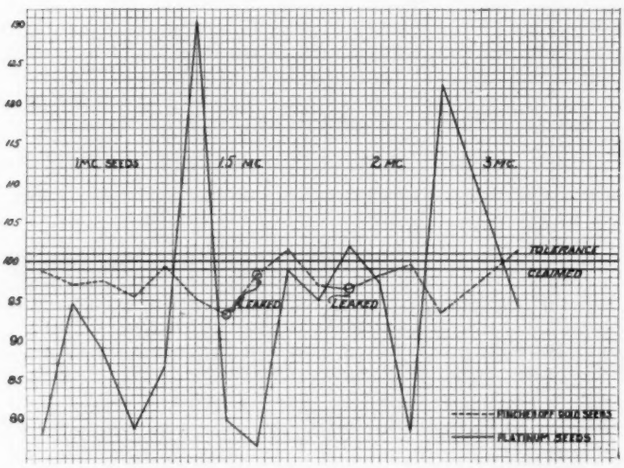


Fig. 4.—Relation of claimed value to measured value.

mandrel comes in contact with the seed, it should not be pushed any farther but should be merely held at this point while the needle is withdrawn with the other hand until it is clear of the opening in the skin, when the mandrel itself is withdrawn. Any irritation produced under these circumstances, therefore, must be produced by the empty needle when first introduced. The only other possible source of tissue irritation comes from the presence within the tissues of the seed acting as a foreign body; this has nothing to do with the smooth or jagged ends of the seed but is solely related to the size of the seed.

In 1934, as far as the American Medical Association is concerned, the control of all matters pertaining to radium and radon was transferred by the Council on Pharmacy and Chemistry to the Council on Physical Therapy. With this control the latter council naturally fell heir to the controversy over the questions of leakage of radon from "seeds" and of tissue irritation arising from any method of preparing the seeds. The Council on Physical Therapy realized at once that, since it was expected by the medical profession to have accurate and reliable information on any subject within the scope of its activities, it was essential that these questions should be thoroughly investigated by those most competent to carry out such investigations. Moreover, the investigators must be specially qualified physicians who had not had any direct or indirect connection with the controversy already mentioned.

The first step was to select a group of consultants who would cooperate with the Council. After thorough consideration by these consultants, by the Radiation Committee of the Council and by the Council as a whole, the following procedure was finally agreed on with reference to the question of leakage:

The different firms who sell or rent radium or radon to the medical profession were to be asked to select an impartial laboratory and submit to it for investigation and report 100 millicuries of radon to be divided as follows:

Twenty-five per cent, thirty seeds each containing 1 millicurie.
Fifteen per cent, ten seeds each containing 1.5 millicuries.
Fifty per cent, twenty-five seeds each containing 2.0 millicuries.
Ten per cent, three seeds each containing 3.0 millicuries.

The seeds were to be furnished in lots of 10 millicuries at intervals of two weeks. The expenses of this investigation were to be met entirely by the firms. The results of the tests were to be submitted by the laboratory chosen to make the investigation directly to the Council on Physical Therapy, which in turn was to refer the report or reports to the special committee of the Council for review; a copy of the report of results was to be sent to each of the firms whose seeds were being investigated. The report of the laboratory was to include a full description of the testing methods which had been employed. Only one firm submitted this evidence.

Besides the foregoing and in order that the Council might have independent information, the Council purchased on the open market 100 millicuries of radon in the following proportions from two firms:

Twenty-five per cent, thirty seeds each containing 1 millicurie.
Fifteen per cent, ten seeds each containing 1.5 millicuries.
Fifty per cent, fifty seeds each containing 2.0 millicuries.
Ten per cent, three seeds each containing 3.0 millicuries.

These were to be supplied in lots as designated by the investigators. The radon was to be made available as follows:

The committee appointed reputable physicians who were willing to cooperate in this venture and who telegraphed or telephoned to the firms an order in the regular way. When the radon arrived, the physicians noted on the carton the date and time of arrival and sent the radon immediately to the National Bureau of Standards in Washington, for testing. The dates of the placing of the orders was controlled by the bureau, which notified the cooperating physician that it was ready for radon at a certain time, so that there was no lost motion.

After the tests had been completed, the seeds were referred to the other members for investigation. The Council paid for the seeds.

The National Bureau of Standards determined the contents of the radon seeds, whether the proper number of millicuries was present at the time of arrival, and whether or not the seeds leaked before sterilization and after sterilization. The method of making these determinations was left to the bureau.

The Committee, cooperating with the physician who was to place the order, examined the advertising

matter and special directions, if any were sent with the radon. The physicians on the committee offered their services free of charge to the Council. They were reimbursed for incidental expenses.

The report of the National Bureau of Standards follows:

We have completed tests for leakage and for millicurie content of 130 seeds which were purchased by Dr. ——— for this purpose. The purchases were distributed as follows as regards nominal content in millicuries: sixty seeds of 1 millicurie each, fourteen seeds of 1.5 millicuries each, 50 seeds of 2 millicuries each and six seeds of 3 millicuries each.

The procedure adopted for test was to measure each seed with a gamma ray electroscope at the hour named for its use on the certificate furnished by the manufacturer. The seed was then enclosed in a sealed glass container and allowed to stand over night. The air was withdrawn from this container into an emanation electroscope the following morning and a determination of the radon content made. The seed was then boiled twenty minutes, again enclosed in a sealed glass container and the emanation measurements repeated as before.

The results of these measurements are shown in the accompanying tables and graph (table 4 and figure 4) where the values, uncorrected for absorption, obtained for the content in millicuries are shown opposite the claimed value and also the amount of leakage in those cases where leakage occurred. The twelve seeds which showed appreciable leakage were all of the "pinched off" gold type. Even in these cases the amount of leakage was less than 1 per cent of the millicurie content, so that from a practical point of view this leakage could be considered as of no consequence.

More important than leakage is the apparent inability of the firms to fill these seeds to radon content claimed on their certificate with the accuracy which they claim. This is plus or minus 1 per cent for any individual shipment. A column of the tables shows the actual percentage of the claimed radon content which we found by gamma ray measurements. These values are also shown in the accompanying chart. The horizontal line represents 100 per cent of claimed value and the plotted points show the actual percentage found for each shipment. The horizontal dotted lines show the tolerance limit of plus or minus 1 per cent as claimed by the firms. Although values of one firm come fairly near to the tolerance, they often exceed it by a factor of 4 or 5. The values of the other firm are much more widely scattered, sometimes being off by as much as 30 per cent.

We are not informed regarding the effect of such inaccuracies upon the medical use of these preparations, but it is apparent that either these seeds should be filled more accurately or the claims of the companies regarding accuracy of filling should be modified to conform with their ability to hold the amount of radon within given limits.

We would appreciate your comments on this report and will be very glad to explain any points we have not made clear. It is our impression that this concludes this investigation, for the present at least, so we are making no further requests for seeds until we hear from you.

L. J. BRIGGS, Director.

This report of the National Bureau of Standards is so explicit that little comment is necessary. One point, however, might be emphasized. The tests have shown that the question of leakage per se is less important than the accuracy of the physical measurements of radon content made by the companies before the seeds are shipped to physicians. And this irrespective of the method of preparing the seeds. If, as shown by the measurements of the National Bureau of Standards, the measurements of radon content made by the companies supplying radon to physicians are so inaccurate (sometimes as much as 30 per cent), it is idle to quibble about occasional leakage of less than 1 per cent.

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. HOWARD A. CARTER, Secretary.

NATIONAL AIR UNIT NOT ACCEPTABLE

Manufacturer: National Mercantile Company, 80 West Washington Street, Chicago.

The National Air Unit is designed to remove pollen, dust and other solid particles from the incoming air for relief of diseases resulting from the inhalation of such particles. It is enclosed in a metal rectangular box 16 inches wide by 10 inches high by 7½ inches deep with intake projection, and the whole is fitted under the ordinary window sash. There are four sets of fixed louvers on the front of the unit. A shutter may be fitted into the intake to permit recirculation of the room air. Rubber weather stripping is provided. The motor is of the induction type for 110 volts alternating current, consuming approximately 45 watts per hour. A Universal motor is available for direct current. The shipping weight is approximately 25 pounds.

The unit is equipped with a four bladed fan which draws the air through the inlet and through two filters, which are composed of oil-soaked spun glass of approximately 1 inch thickness fixed in a loose wire frame. The filters are set at an angle to the intake, so that approximately 50 per cent of the air passes through each filter. There is a small pan in front of the fan which may be filled with water for humidification.

It is claimed by the manufacturer in data submitted from an engineering firm that the filter will remove 99.47 per cent of pollen, dirt and dust from the air. In order to substantiate these claims the Council appointed a competent physician to investigate the unit. It was installed in an ordinary bedroom window.

Greased slides were hung in front of the filters and also in front of the fixed louvers. One tenth Gm. of ragweed pollen was spread on a sheet of paper and laid under the intake opening. The unit was then started and run for an hour, slides being removed at different intervals and examined for pollen. Large numbers of pollen grains were observed, one count reaching 143 pollen grains in ⅛ sq. cm. of area counted on the slide exposed in front of the louvers. Slides exposed on the filter pads themselves showed a much higher count.

The unit was then operated for two weeks during each night until it was fairly well covered with dirt and dust. A new set of slides was then exposed in the same manner as before. No pollen grains were observed, indicating that either the pollen was well adhered to dust particles and the oiled fibers of the filters or had entirely passed through them. A new set of slides was then prepared and placed as described and another 0.1 Gm. of pollen was introduced as on the previous occasion. The slides were removed at varying intervals. Those removed in fifteen minutes averaged 103 pollen grains in ⅛ sq. cm. of area counted, the count dropping somewhat at the end of an hour. Apparently the unit is inadequate for the removal of pollen. Large dust particles were observed on all slides exposed, the particles running as high as approximately 50 microns.

The amount of air delivered roughly averaged 150 cubic feet per minute, as measured by the anemometer. The room was exceedingly stuffy and there was an inadequate intake of air to keep the atmosphere comfortable during hot weather. At first the unit was comparatively noiseless but toward the end of the experiment created considerable noise and disturbance in its operation.

Two pieces of advertising matter were submitted with the unit. A pamphlet, "The National Air Unit," makes claims out of proportion to the Council's findings. Objectionable points were observed such as "relieves hay fever and other respiratory diseases." A filter cannot conceivably relieve a respiratory disease. Another misleading statement is "balanced humidity the year around." Although air conditioning equipment might do this, it is not believed that there is a filter unit at the present time that can substantiate this claim.

The second piece of advertising matter, "Plenty of Clean, Fresh Air For Your Health and Comfort," contains many

exaggerated, unwarranted or misleading claims. According to the Council's findings the air volume claim is in excess of the actual amount of air circulated; the efficiency of the filters is nowhere near the value claimed; there is insufficient provision for proper humidification, and the unit becomes noisy after prolonged use.

In view of the foregoing report, the Council on Physical Therapy voted not to accept the National Air Unit for inclusion in its list of accepted devices because the unit is mechanically unsatisfactory and advertising claims made for it are exaggerated, unwarranted or misleading.

Council on Pharmacy and Chemistry

SPECIAL REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING SUMMARY OF REPORTS SENT TO THE JOURNAL BY PHYSICIANS WHO HAVE USED THE DRUG. IT IS NOT TO BE CONSIDERED AS THE STUDIED OPINION OF THE COUNCIL BUT AS A CONSENSUS OF THE INVESTIGATORS' REPORTS.

PAUL NICHOLAS LEECH, Secretary.

SULFAPYRIDINE

During the past year the drug sulfapyridine (2[para-aminobenzene-sulfonamido] pyridine) has been used experimentally and clinically in this country in the treatment of various types of pneumonia. After careful study, the United States Food and Drug Administration granted the right to manufacturers to distribute the drug in interstate commerce under the stipulations of the act dealing with new drugs. In connection with this study the advice of the Council was sought and received by the Food and Drug Administration. During the period when the drug was under consideration, THE JOURNAL and the Council made every effort to obtain essential information concerning its usefulness and, in so doing, has consulted approximately 100 physicians who have replied to inquiry giving the details of their experiences with the drug. The following statements form a summary of opinion based on the replies which these physicians submitted. In the absence of clinical reports giving detailed information on the drug in the treatment of pneumonia, and because of its importance in present day therapy in pneumonia, the Council submits this summary for the consideration of the medical profession, in addition to the Preliminary Report of the Council which was published in the February 11 issue of THE JOURNAL.

Physicians who were consulted employed this drug in the treatment of approximately 1,800 cases of pneumonia in adults and 650 in children. In some of the cases the drug was employed concurrently with serum; some employed it before and others after the administration of serum, and in many cases the drug was employed alone, without the use of serum.

The replies received lead the Council to believe that it is exceedingly important to discuss typing of pneumonia in connection with the use of this drug before giving further consideration to its use in a given case. It is essential wherever possible to type each case of pneumonia before this drug is administered, because it has been reported by a number of investigators that there are cases of pneumonia which do not respond to this drug and have subsequently responded to the specific antiserums. This cannot be too strongly urged, for at present the reports deal only with the treatment of one year's series of pneumonia cases. The relative virulence of pneumonia during this particular period cannot be established beyond any question of doubt and therefore it is essential to employ this chemical agent over a period of years before the extent of its usefulness both alone and as compared with specific antiserum can be definitely determined. For these two reasons, typing should be continued wherever possible.

One principal finding of those who have employed this drug during the past year is that it is particularly efficacious in the pneumonia of children. It will be recalled, however, that many clinics are not in the habit of employing specific antiserums in the treatment of most of their cases of pneumonia in children. The reason for this is the relatively low mortality of pneumonia in this age group. Therefore the effect of sulfapyridine on the mortality of pneumonia in this age group is of less significance than the fact that the severity of the illness is lessened and its course shortened by the use of sulfapyridine. Because of these facts it seems unjustifiable to compare the usefulness of sulfapyridine with specific antiserum in the treatment of pneumonia in this age group on the basis of mortality rate; at the same time it is acknowledged that it appears to be a useful therapeutic measure in the treatment of children suffering from pneumonia.

Its use in adults presents a different problem. Some clinics have found that many cases of pneumonia are particularly susceptible to the combined use of specific antiserum and sulfapyridine. Certain investigators enthusiastically prefer sulfapyridine to antiserum in the treatment of pneumonia in adults. Others advocate it more particularly in pneumonias for which there is no available antiserum. Still others find that the comparative effectiveness of sulfapyridine (both alone and combined with specific antiserum) differs in the various types (I, II, III and so on) of pneumococcic pneumonias. There is not, however, at present sufficient evidence on which to base recommendations for the preference of either in the thirty-two types or even in the most common of the types of pneumonia.

Of primary consideration in the clinical evaluation of any new drug is the toxicity which is encountered in its clinical use. A most common and consistent toxic manifestation of sulfapyridine is nausea and vomiting. Strangely enough this is less frequent in children, but occasionally in adults it reaches the point that necessitates discontinuance of the drug. Occasionally toxic manifestations have been encountered suggesting what might be expected, that the toxicity of sulfapyridine is similar to that of sulfanilamide. To the extent that this drug has been used in pneumonia, the incidence of such complications seems to be as low as, if not lower than, with sulfanilamide. Occasional cases of granulocytopenia, hemolytic anemia and various sensitizations with cutaneous manifestations have been encountered. There also seem to be occasional cases of azotemia and very rarely cases in which there is temporary hematuria, which in some cases has been quite severe. Cyanosis has also been encountered and there has been some leukopenia but its relationship to the lessening of the infection has not been clearly demonstrated.

The manner in which this drug acts has not been definitely established. The drug, for the most part, does not produce all of the changes seen at the crisis in pneumonia, whether a normal crisis or one induced by specific antiserum, but produces results more similar to a short course of bronchopneumonia. The temperature falls in several days, as a rule, following administration of sulfapyridine but there is a considerable tendency for lethargy to remain. In fact, there have been occasional cases in which the lethargy has seemed to increase somewhat to the point of mild mental disturbances which are of short duration.

All of these observations lead to the suggestion that, while there is much to be learned about the exact place of sulfapyridine in the treatment of pneumonia, it appears to be a very useful measure in many cases when properly employed. The facts also suggest considerable caution in its use until such time as more evidence is available of its usefulness and safety. Details of and cautions for administering this drug are discussed further in the description (see page 1831 of this issue of THE JOURNAL).

In summary, it may be stated that at present there is every indication that this drug is a useful remedy, and that it remains to be determined just how effective it is and just how well it will compare with antiserum in various epidemics or over a course of years in various types of pneumococcic infections.

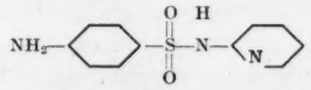
An informal report was presented to the Council at its annual meeting in March of this year and the Council voted at that time to accept sulfapyridine for inclusion in New and Nonofficial Remedies and to proceed with the consideration of the submitted brands of the drug.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

SULFAPYRIDINE. — 2-sulfanilamidopyridine. — 2-para-amino-benzene-sulfonamido-pyridine $NH_2C_6H_4SO_2NHC_5H_4N$.— N^2-sulfanilyl-2-aminopyridine.—N^1(2-pyridyl) sulfanilamide.



Actions and Uses.—It has been reported that sulfapyridine is an effective chemotherapeutic agent in the treatment of experimental pneumococcic, streptococcic, meningococcic, staphylococcic, Friedländer's bacillary and Welch bacillary infections in mice. Clinically, therapeutic successes have been reported in pneumococcic lobar and bronchial pneumonia, gonococcic, staphylococcic and meningococcic infections. However, the evidence of its effectiveness is convincing only in respect to its use in pneumococcic infections, in which it is apparently about equally effective against all the known types of the pneumococci. Its use in other types of infection must be considered experimental at the present time. In comparison with sulfanilamide, sulfapyridine is irregularly and often poorly absorbed when the drug is given by mouth. The differences in absorption seem to be due to an individual response on the part of the patient. This factor makes rational therapy with the drug more difficult than is the case with sulfanilamide. It also makes it more desirable than ever that the concentrations of sulfapyridine be determined in the blood of patients who are receiving this drug. The drug is, as a rule, conjugated to the acetylated form in the blood and tissues to a higher degree than is sulfanilamide. As the conjugated fraction is inactive from the therapeutic point of view, this again makes therapy at times difficult. As far as is known, the fraction of the drug which is absorbed is excreted mainly by the kidneys in the free and conjugated forms. Excretion is slower than is that of sulfanilamide, and it may be four or five days after the drug has been stopped before it is entirely eliminated from the body.

No patient should be treated with sulfapyridine unless arrangements have been made for daily attention by a physician. This is because of the possibility of serious toxic effects, which, while not frequent, are somewhat unpredictable in their occurrence and presumably have as their basis a peculiar idiosyncrasy. Nausea and vomiting, sometimes very severe, are much more frequent in the course of sulfapyridine therapy than in that of sulfanilamide. Cyanosis, on the other hand, is less marked, as a rule. Acidosis has not been noted, and for this reason it is unnecessary to prescribe sodium bicarbonate when sulfapyridine is being administered. Instances of gross hematuria with and without signs of renal failure have been noted in patients receiving the drug. The mechanism of the production of the hematuria is unknown at the present time. If hematuria occurs, the drug should be stopped. The hematuria may be associated with the formation of acetyl sulfapyridine stones in the pelves of the kidneys. Drug fever, dermatitis, acute hemolytic anemia, toxic hepatitis and agranulocytosis have been noted in the course of sulfapyridine therapy. The toxic manifestations are very similar to those produced by sulfanilamide and occur at the same periods in the course of therapy as do those produced by sulfanilamide. If toxic conditions arise, plenty of water should be given to wash out the drug.

Dosage.—Adequate standards of dosage have not as yet been agreed on by investigators who have used this drug in the treatment of pneumococcic infections. However, the evidence points to the fact that it is important to establish adequate blood levels of the drug within the first day of treatment. Hence in adults suffering from lobar pneumonia large initial doses are given, such as 4 Gm. in a single dose followed by 1 Gm. of the drug every four hours by mouth, this to be continued until the temperature has been normal for at least forty-eight hours; then the dose may be cut to 1 Gm. every six hours and continued until the resolution of the pneumonic process is well under way. At this point the dose of the drug should be reduced to 0.5 Gm. four times a day and should be continued until the lungs are clear. It has been noted that, if treatment with the drug is stopped too soon, recurrence of the pneumonic process may occur. Concentrations of 4 mg. per hundred cubic centimeters or more of free sulfapyridine in the blood seem to be necessary for prompt therapeutic responses to the drug.

In children, the initial dose should be from 1 to 2 Gm., depending on the weight of the child, and then from 0.5 to 1 Gm. every four or six hours until the temperature has been normal for forty-eight hours. Following this, the dose of the drug may be gradually reduced until the lungs are clear.

Adequate standards of dosage have not been worked out for the drug in other types of infections.

For determination of sulfapyridine in body fluids a method developed by E. K. Marshall Jr. and A. C. Bratton (to be published in the near future) is to be recommended.

Sulfapyridine occurs as a white, odorless, practically tasteless, crystalline substance. The melting point is 192 ± 1 degree C. (micro melting point apparatus, rate of heating 4 degrees per minute). It is soluble to the extent of approximately 1 per cent in boiling water and about 0.03 per cent at 20 C.; soluble to the extent of about 0.25 per cent in 95 per cent alcohol; soluble in acetone. It forms water-soluble salts with strong bases or mineral acids.

Place approximately 0.01 Gm. of sulfapyridine in a small test tube and heat cautiously over an open flame until the material melts; a brown color develops and an odor of sulfur dioxide is evolved if heating is prolonged (*distinction from sulfanilamide, which yields a blue-violet color and the odor of ammonia*).

Digest about 1.5 Gm. of sulfapyridine with 75 cc. of boiling water, cool and filter: the saturated aqueous solution of sulfapyridine is neutral to litmus. To 25 cc. of the filtrate add 5 drops of nitric acid and 1 cc. of silver nitrate test solution: the turbidity produced corresponds to not more than 0.01 mg. of chloride. Evaporate another 25 cc. to approximately 10 cc.; add 1 cc. of normal hydrochloric acid and 1 cc. of barium chloride test solution: any turbidity produced corresponds to not more than 0.1 mg. of sulfate ion. Incinerate 1 Gm., accurately weighed, of sulfapyridine: the residue is not more than 0.05 per cent. Add to the residue remaining in the test for ash 0.1 cc. of hydrochloric acid and 0.05 cc. of nitric acid and evaporate on the steam bath. Take up the residue with 0.5 cc. of normal hydrochloric acid and 20 cc. of water; add 10 cc. of hydrogen sulfide water: any darkening produced is not greater than that produced in a control made with 0.01 mg. of lead. Approximately 0.1 Gm. of sulfapyridine shall pass the test for arsenic (U. S. P. XI, p. 436). Dry about 0.1 Gm. of sulfapyridine, accurately weighed, to constant weight at 80 C. under vacuum not exceeding 15 mm. of mercury for approximately five hours: the loss does not exceed 0.5 per cent.

Dissolve approximately 0.2 Gm., accurately weighed, of sulfapyridine, previously dried, in 2 cc. of concentrated hydrochloric acid and 20 cc. of water. Cool and add 15 Gm. of ice. Agitate the solution and titrate with 0.1 molar sodium nitrite solution. Streak the solution on freshly prepared starch iodide paper until an immediate blue streak is obtained. Each cubic centimeter of 0.1 molar sodium nitrite solution corresponds to 0.02493 Gm. of sulfapyridine. The assay is not less than 99.0 per cent nor more than 100.5 per cent. Tablets are assayed by titrating with 0.1 molar sodium nitrite.

SODIUM MORRHUATE (See New and Nonofficial Remedies, 1938, p. 448).

Ampoule Solution Sodium Morrhuate 5% with Benzyl Alcohol 2%, 2 cc.: Each cubic centimeter contains sodium morrhuate 0.05 Gm. (¾ grain) and benzyl alcohol 0.02 Gm. (⅓ grain) in aqueous solution.

Prepared by The Upjohn Company, Kalamazoo, Michigan. No U. S. patent or trademark.

Solution Sodium Morrhuate 5% with Benzyl Alcohol 2%, 30 cc. Vials: Each cubic centimeter contains sodium morrhuate 0.05 Gm. (¾ grain) and benzyl alcohol 0.02 Gm. (⅓ grain) in aqueous solution.

Prepared by The Upjohn Company, Kalamazoo, Michigan. No U. S. patent or trademark.

Ampoule Solution Sodium Morrhuate 10% with Benzyl Alcohol 2%, 2 cc.: Each cubic centimeter contains sodium morrhuate 0.1 Gm. (1½ grains) and benzyl alcohol 0.02 Gm. (⅓ grain) in aqueous solution.

Prepared by The Upjohn Company, Kalamazoo, Michigan. No U. S. patent or trademark.

Solution Sodium Morrhuate 10% with Benzyl Alcohol 2%, 30 cc. Vials: Each cubic centimeter contains sodium morrhuate 0.1 Gm. (1½ grains) and benzyl alcohol 0.02 Gm. (⅓ grain) in aqueous solution.

Prepared by The Upjohn Company, Kalamazoo, Michigan. No U. S. patent or trademark.

RABIES VACCINE (See New and Nonofficial Remedies, 1938, p. 402).

National Drug Company, Philadelphia.

Rabies Vaccine-Human (Phenol-Killed).—Antirabic vaccine prepared according to the general method of Sir David Semple. The brain and spinal cord of rabbits killed on the sixth or seventh day after inoculation with fixed rabies virus are ground in a ball mill for forty-eight hours with physiological solution of sodium chloride containing 1 per cent phenol. The emulsion is incubated at 37.5 C. for twenty-four hours and finally sufficient physiologic solution is added to bring the phenol content to 0.5 per cent. It is kept in the refrigerator for thirty days. Sterility tests are made in fermentation tubes, toxicity tests are made on guinea pigs and safety tests are made on rabbits by intracerebral injections of 0.2 cc. each, the animals being kept under observation for four weeks. Marketed in packages of seven 0.5 cc. ampule-vials (without syringe) and in fourteen 0.5 cc. ampule-vials (with syringe). All doses are of the same potency; one dose is to be given daily over a period of fourteen days.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MAY 6, 1939

HUMAN RHEUMATIC VIRUS

The cultivation of a barely visible filtrable pleuropneumonia-like virus [1] from human rheumatic exudates and proof of its pathogenicity for laboratory animals has been reported recently by Swift and Brown [2] of the Rockefeller Institute. The chorio-allantoic membranes of chicken embryos were inoculated with joint exudates. Characteristic pearl-like lesions developed on the egg membranes, "globular structures surrounded with flattened epithelium but containing in their center condensed eosinophil material." As many as twenty-four serial passages of the nodule-producing virus were made. During this process an occasional egg became contaminated with ordinary bacteria. Contaminated egg membranes emulsified in 10 per cent human serum were readily freed from all ordinary bacteria by Berkefeld filtration. The resulting filtrates showed little or no reduction in nodule-producing virus titer.

By the Sabin method of "blind passages" [3] in beef-serum-dextrose-broth the investigators eventually succeeded in growing a minute, barely visible, pleomorphic micro-organism from such filtrates and directly from bacteriologically sterile human rheumatic exudates. Typical chorio-allantoic lesions were produced with these presumably pure virus cultures.

Mice inoculated intranasally with virus cultures developed pneumonia. The inciting agent has thus been transmitted serially in mice by using as the second inoculum ground pneumonic mouse lungs suspended in broth. Ordinary bacteria have been absent from these lungs as determined by both microscopic and culture technics. Further it was found that 0.1 cc. of a pure virus culture will cause iritis and diarrhea [sic] if injected into the vitreous humor of rabbit eyes. Mice inoculated intracerebrally, intravenously or intraperitoneally, however, failed to develop characteristic lesions, even though some of them were obviously sick. The human rheumatic virus, therefore, differs from the mouse arthritis virus recently described by Sabin,[4] which is infectious if injected either intravenously or intraperitoneally in mice.

Thus far no study of serologic specificity has been reported with the human rheumatic agent. Whether or not the Swift-Brown virus is to be considered as a filtrable phase of the streptococcus, therefore, is still an open question. Cultivation of this virus-like micro-organism from joint fluids, pleural exudates and erythema nodosum nodules, however, suggests a new epidemiologic theory of rheumatic disease.

1. Whether the minute filtrable agent causing bovine pleuropneumonia should be classified as a virus or as a midget bacterium is still a controversial question.
2. Swift, Homer F., and Brown, T. M.: Science **89**: 271 (March 24) 1939.
3. Sabin, A. B.: Science **88**: 575 (Dec. 16) 1938.
4. Sabin, A. B.: Science **89**: 228 (March 10) 1939.

ARTIFICIAL INSEMINATION AND ILLEGITIMACY

Whether a child begotten from artificial insemination is legitimate or illegitimate according to the law is an important question. If the child is illegitimate and if the husband of its mother fails to adopt it legally, the child does not acquire inheritable rights from the husband. A child is legitimate if its parents are intermarried when it is begotten or born. Statutes generally legitimatize also the issue of illicit intercourse if the parents intermarry, even though the intermarriage occurs after birth. The fact that conception is effected not by adultery or fornication but by a method not involving sexual intercourse does not in principle seem to alter the concept of legitimacy. This concept seems to demand that the child be the actual offspring of the husband of the mother of the child.

The presumption of law that a child born during wedlock is legitimate is not absolute and conclusive under all circumstances. Even at early common law the presumption was overcome by proof of the husband's sterility.[1] Today the presumption as to legitimacy is more easily controverted than it was in earlier times. Now it is generally recognized by the courts that a child is illegitimate, though born or begotten during marriage, when it is impossible that its mother's husband could have been its father. Every species of legal evidence tending to this conclusion is admissible on the trial of the issue as to its legitimacy.[2]

Artificial insemination can be effected from only two sources: from the semen of the husband of the prospective mother and from the semen of some other male. If the semen of the husband is used, the child obviously is as legitimate as if it were the result of normal and usual intercourse between husband and wife. If the semen of some other male is utilized, the resulting child would seem to be illegitimate. The fact that the husband has freely consented to the artificial insemination does not have a bearing on the question of the child's legitimacy. If it did, by similar reasoning

1. See cases cited in Annotations to 36 L. R. A. (N. S.) 258 and 126 A. S. R. 261.
2. See cases cited in Annotation to 31 A. L. R. 1119.

it might be urged that the fact that a husband had consented to the commission of adultery by his wife would legitimatize the issue resulting from the adulterous connection.

Some advise that all question as to the legitimacy of a child produced from the semen of a male other than the husband of the mother be ignored, apparently relying on the secrecy attendant on artificial insemination and on the presumption of law that a child born during wedlock is legitimate. Such reliance, however, disregards the apparent intent of the husband to confer on the child the rights incident to legitimacy. Those rights, if illegitimacy or even doubt as to legitimacy is frankly recognized, can be assured by adoption proceedings, which ordinarily are comparatively simple.

In many instances of artificial insemination, perhaps in a great majority, the facts may never be known to any one other than husband and wife and the physician involved. There is the possibility, however, that interested relatives may learn of the circumstances and may procure the evidence necessary to overcome the presumption of legitimacy and may thus deprive the child of a share of intestate property. It is the just due of the child that false pride or considerations of delicacy be put aside and that it be given, through adoption proceedings, the protection intended by the husband of the mother when he consents to the artificial insemination of his wife.

SULFAPYRIDINE

In THE JOURNAL, February 11, appeared five communications on sulfapyridine. One was a report of the Council on Pharmacy and Chemistry in which the Council recommended that the preparation be not licensed for sale in interstate commerce at that time. Under the new food and drug act we have advanced greatly in the commercial introduction of new products. For the first time a preliminary survey of the potentiality for good and for harm preceded the exploitation of a drug. The medical profession had opportunity of being informed and its representatives consulted about the drug before any preparation was placed on the open market.

After the Council had published its preliminary report, much evidence was assembled. March 2 THE JOURNAL sent inquiries to all investigators who had clinical experience with the product during the period between its availability for experimental use and its introduction on the market. Replies were received from about 100 investigators; the summation of their replies appears elsewhere in this issue, in a report of the Council on Pharmacy and Chemistry. The results of these investigations yield two significant observations: first, sulfapyridine is a drug of exceedingly great value in certain cases of pneumonia; second, like sulfanilamide it is a drug that needs careful supervision. Its use may probably give rise to as many side reactions as sulfanilamide, if not more—for instance, hematuria. (See article and editorial comment on kidney complications in this issue.)

Sulfapyridine was licensed for sale in interstate commerce on or about March 10. The Council and THE JOURNAL approve the action taken by the government in releasing the drug at that time. The final survey by the Food and Drug Administration was carefully conducted and warranted the release. At present THE JOURNAL is overwhelmed with papers that have been sent in by various investigators. THE JOURNAL is grateful for these contributions. Since, however, most of the original articles are merely confirmatory of work already published, it has been necessary for THE JOURNAL to accept only a few articles. Manuscripts dealing with unusual side reactions or unusual toxic effects or papers reporting extended studies will of course be given special consideration.

Several physicians and organizations have sent inquiries to the headquarters of the American Medical Association asking for an explanation of the relatively high cost of sulfapyridine—approximately 10 cents for a 5 grain tablet in lots of 1,000. A number of factors probably enter into the situation. The drug is patented and therefore not available to free competition. May & Baker, the English concern, assigned its patent rights to Merck & Company of New York. The Calco Chemical Company, it is also understood, claims that it is entitled to a patent and has filed interference claims. One of the ingredients for making the drug, pyridine, has skyrocketed in price from about 35 cents a gallon to approximately $1.75 a gallon. Of course the introduction of any new drug entails tremendous expense, because of the high cost of investigation; in addition, much of the drug must be given free to investigators. For this outlay the firms must be repaid. That the drug might be available and not withheld because of legal complications due to the patent situation, the Calco Chemical Company—a member of the American Cyanamid Corporation—and Merck & Company apparently entered into an agreement whereby the Lederle Laboratories of New York—also a member of the American Cyanamid Corporation—would be the outlet for the pharmaceutic and medical distribution of the drug. The Lederle Laboratories, it will be recalled, have contributed greatly to the development of serums for the treatment of pneumonia, thus being concerned simultaneously with biologic and chemotherapeutic agents. Even with the high price of sulfapyridine, the cost of treatment is considerably less than with the use of antipneumococcus serum. No doubt the commercial investments will soon be equalized, and there is reason to hope that the price of sulfapyridine may be materially reduced in the near future.

Current Comment

BOARD OF TRUSTEES MEETS WITH REGENTS OF COLLEGE OF PHYSICIANS

On April 29, pursuant to its established policy, the Board of Trustees and officers of the American Medical Association conferred with the regents of the American College of Physicians concerning problems of mutual interest, particularly graduate education and the preparation of young men for the practice of internal medicine. Similar conferences will be held with other groups to secure mutual understanding and more effective cooperation from various medical organizations in the specialties where there is joint interest and concern, the purpose being to avoid duplication of effort and unnecessary expenditure of funds, and also to develop efficient leadership, unification of action and satisfactory progress. The discussions on graduate education in the field of internal medicine were led, for the regents of the American College of Physicians, by Drs. O. H. Perry Pepper and Hugh Morgan, and, for the American Medical Association, by Drs. Arthur W. Booth, Austin A. Hayden, Charles Benjamin Wright and R. L. Sensenich of the Board of Trustees and Drs. W. D. Cutter and J. H. Musser of the Council on Medical Education and Hospitals. Most of the other members of the conference also participated in the general discussion. It is proposed to hold similar sessions from time to time with the executive bodies of other leading organizations in the field of the medical specialties.

EFFECT OF SULFAPYRIDINE ON THE URINARY TRACT

A new complication associated with the administration of sulfapyridine is described elsewhere in this issue.[1] Three cases of hematuria, abdominal pain and nitrogen retention were associated with the administration of this drug. All three showed hematuria apparently due to the drug, while in two there was severe abdominal pain of renal and ureteral origin. In the two in which the determination was done there was nitrogen retention due to renal insufficiency. None of the patients had shown evidence of urinary tract disease prior to the administration of the drug for pneumonia. In all instances the manifestations cleared promptly when sulfapyridine was stopped and adequate fluids were administered. Confirmatory evidence of an experimental nature is offered by the recently reported study of Antopol and Robinson,[2] who observed the formation of uroliths in the urinary tract of rats, rabbits and monkeys fed with sulfapyridine. While concretions have been observed after the administration of a single large dose, the results were more striking after a repeated feeding on successive days, although urolith formation varied greatly in the different species and to some extent even in the same species. A few hours after the oral administration of a large dose of sulfapyridine the urinary tract in susceptible animals contained needle-like crystals of the acetyl derivative of sulfapyridine. The crystals in animals that were killed were observed most frequently at the level of the bony pelvic brim. The microscopic appearance of the kidney varied with the degree of urinary stasis. There is, it is pointed out, a suggestion that the crystalline compound, when not excessive, can either be redissolved or washed out. The uroliths consisting of this acetyl derivative permit penetration of x-rays, but it has been observed that calcium can be deposited about these concrements, in which case the shell may become radiopaque. The serious potentialities of this complication of sulfapyridine therapy necessitate careful observation in each case.

1. Southworth, Hamilton, and Cooke, Crispin: Hematuria, Abdominal Pain and Nitrogen Retention Associated with Sulfapyridine, this issue, p. 1820.

2. Antopol, William, and Robinson, Harry: Urolithiasis and Renal Pathology After Oral Administration of 2(Sulfanilylamino)Pyridine (Sulfapyridine), Proc. Soc. Exper. Biol. & Med. **40**: 428 (March) 1939.

THE SURGEON GENERAL'S REPORT

The annual report for the fiscal year 1938 by Surgeon General Thomas Parran of the Public Health Service[1] summarizes health conditions in 1937. The general health conditions in the United States were favorable for 1937, as indicated by preliminary mortality rates. There is an indicated decrease in the death rate of about 3 per cent in 1937 as compared with 1936, and a decrease of more than 8 per cent in the infant mortality rate. The decline in maternal mortality was continued in 1937 as evidenced by a provisional rate of 4.6 per thousand live births, as compared with 5.3 for 1936. In one respect in particular, however, the United States health record was unenviable. For 1937 forty-eight states reported a total of 11,673 cases of smallpox as compared with 7,834 for 1936 and 7,957 for 1935. The number of cases for 1937 was the highest since 1931, although fortunately the case fatality rate was favorably affected by the generally mild, nonvirulent type of smallpox which obtained. The activities of the Public Health Service remain impressive. Active assistance has been rendered to numerous states and territories. Progress in investigative matters was signalized by the organization of the National Cancer Institute and by the laying of the corner stone of the first building to be erected in the new group of structures for the National Institute of Health near Bethesda, Md. Continued attention has been given to evolving a satisfactory control of biologic products, a work in which the actions of the health service have been invaluable. Investigations have been carried on in industrial hygiene, especially with the object of developing means for the protection and improvement of the health of the workers in various fields of industry, and an extensive study of rheumatic heart disease has also been conducted with noteworthy preliminary statistical, clinical and laboratory investigations already reported. Other important activities of the Public Health Service have been related to poliomyelitis, sanitation, grants-in-aid for cancer research, quarantine and immigration activities, mental hygiene and, of course, venereal disease control. The continued improving picture of the country's health is evidence that health conditions are not as black as they are sometimes painted.

1. Annual Report of the Surgeon General of the Public Health Service of the United States for the Fiscal Year 1938.

ORGANIZATION SECTION

DISTRIBUTION OF PHYSICIANS IN NEW YORK STATE

A decennial study from 1878 of the distribution of physicians in New York State made by Dr. Joseph S. Lawrence and published in the *New York State Journal of Medicine* (**39**: 199 [Feb. 1] 1939) shows that:

In the entire state the population has increased 167 per cent in the last sixty years, while the number of physicians has increased 477 per cent. In upstate areas the increases have been 86 per cent and 256 per cent respectively. The ratio of physician to population in the entire state is 1:576, while in upstate alone it is 1:720. In Greater New York the ratio is 1:497 and in Manhattan and Brooklyn, where there is the greater concentration of specialists, the ratio is 1:387. The increase in the population of these two boroughs in the last sixty years is 146 per cent, while the physicians increased 581 per cent. While the physicians increased much more rapidly than the population, the increase in some rural counties was much greater; for example, in Orange County, where the population increased but 50 per cent, the physicians increased more than five times that much, 288 per cent; in Rockland the population increased 124 per cent and physicians 693 per cent; in Warren the population increased 40 per cent and physicians 319 per cent.

Dr. Lawrence finds that the common complaint concerning the age and scientific qualifications of the rural physicians is not justified in New York State. According to the report:

Laboratory and hospital facilities are readily available to the rural resident physician, and journals and county medical society postgraduate courses help him keep abreast of the time as well as the urban resident physician.

The conditions and opportunities of the rural and urban physicians being so nearly equal, one might expect the periods of practice to bear a close resemblance, and they do. Approximately 25 per cent of the physicians in both areas have been in practice less than ten years and another 20 to 25 per cent have been in practice less than twenty years. The assumption that the recent graduate shuns rural practice is only partly correct. Many seek rural locations but, not being successful, are eventually obliged to locate in the cities. But there is another factor operating. Not a few physicians, seeing their most prosperous families forsake the farms for the cities, have followed them advantageously.

The state is well supplied with hospitals, maternity homes and laboratories, the latter being largely under the Division of Laboratories of the State Department of Health.

The report reaches the following conclusions:

Resident physicians and hospitals are distributed throughout the state in such fashion that no area is without medical service. Schuyler County has the lowest ratio of physician to population, 1:1,298, and the highest is in Dutchess County, 1:478. In the relation of general hospital beds to the population, the lowest is found in Livingston County, 1:1,644, and the highest ratio exists in Ontario County, 1:84. In evaluating these figures, it must be borne in mind that no county is an isolated unit, so that the services of physicians and hospitals of neighboring counties are always available.

Improved conditions for transportation and communications in the rural districts have increased the usefulness of the physician many times over what it was just ten years ago.

The same conditions have led the rural resident to seek the services of the city physician except for emergencies. In some instances this trend has induced rural physicians to move to the cities, at the same time retaining their rural practices.

None the less improved living conditions are attracting young men to locate in the rural areas.

There is no marked difference in the ages of the men practicing in the rural districts as compared with those in the urban districts.

Decreases in population must be marked and prolonged before there is any effect on the number of physicians. Areas of growing population have larger proportions of young physicians.

Nursing service as a part of a public health program demands prompt study.

STATE AND CONTRACT MEDICINE

The annual session of the International Medical Association, held at Copenhagen Aug. 25-28, 1938, heard the report of an inquiry with regard to the effect on the medical profession of a physician's holding several offices or receiving fees from several sources in the practice of medicine. The report was published in the *Revue internationale de médecine professionnelle et sociale* **11**:59 (Nov.) 1938.

Dr. Zahor of Czechoslovakia discussed the general effect of an increase in salaried physicians employed especially by the state or in sickness insurance organizations. He insisted that the most important factor in the problem was the moral effect on the physician. In discussing this, he said: "The limit of medical activities must be the possibility of maintaining honest and conscientious service. This is all the more important since the services of a physician deal with the things most dear to humanity: the health, whether of the individual as with the great majority of practicing physicians or of collective society as is the case with health officials, employees of sickness insurance institutions and so on. . . . It seems unnecessary to say again that the relations between the physician and his patients should be confidential. But actually this is no longer the case, when treatment takes on a certain 'routine.' We would offer all possible resistance to this tendency. The patient is not an object on an assembly line. Sickness is not a number on the register, even though financial considerations may make it necessary to give it such a number. Every patient must be seen as an individual: a good physician should individualize his treatment and always feel the full responsibility which the confidence of the patient places on him.

"The physician holds within his hands health or sickness, capacity to work or invalidity, hope and despair, life and death. It is due wholly to the great value of his services that the physician has acquired his social position, his material and economic level, his moral and political position, and above all his success. Every service that is performed superficially, in haste or with negligence is unworthy of a physician and harmful to his profession. Now, excess of work leads to just these things, and that is why the physician should not be permitted to undertake more labor and more functions than those which he can do honestly and conscientiously. . . .

"From another point of view, the interests of the profession demand that the principles of ethics of the medical group should be observed by every physician. This not only is necessary to preserve the prestige of the profession but also is of importance economically. But necessity knows no law, and poverty destroys the character. For those who cannot

obtain even the minimum necessities to exist, there is great danger that forbidden positions will offer forbidden rebates and will betray the professional group, to its great embarrassment. We must admit that there are already visible within the medical corps certain regrettable symptoms which demand the energetic attention of the professional group if we are to prevent a fall in the moral standard. . . .

"First of all, a professional organization has a duty to prevent situations which injure its members. . . . It should demand that medical employees be obtained exclusively through the medical society. Any institution that has need of the services of a physician should address itself to the medical association to determine the conditions of employment. Each proposal should take into consideration, first, not only the desires and interests of the institutions making the request but also those of the candidates for the position, their economic situation, and their occupations, with a view to avoiding duplications of positions."

OFFICIAL NOTES

RADIO BROADCASTS

The radio broadcasts by the American Medical Association and the National Broadcasting Company, under the title Your Health, continue as previously announced each Wednesday over the Blue network of the National Broadcasting Company at 2 p. m. eastern standard time (1 p. m. central standard time, 12 o'clock mountain time, 11 a. m. Pacific time).

Starting April 30, daylight saving time takes effect in Chicago. The program will therefore be broadcast at the same hour Chicago daylight saving time, which means one hour earlier central standard time, two hours earlier mountain time and three hours earlier Pacific time. In communities where daylight saving time is in effect there will be no change in the hour of the broadcast.

Owing to network conflicts the Chicago broadcast does not occur at 1 o'clock Wednesday but there is a rebroadcast from a recording over station WENR at 8 o'clock each Monday evening, on and after May 1 (8 o'clock Chicago daylight saving time, 7 o'clock central standard time). The program broadcast each Monday is identical with the network program of the preceding Wednesday.

The next three programs to be broadcast, together with their dates and their topics, are as follows:

May 10. The Doctor's Workshop.
May 17. Healthier Babies.
May 24. No broadcast because of radio conflicts occasioned by visit of British sovereigns to the United States.

THE ST. LOUIS SESSION

Special Radio Programs

The following radio programs have been arranged in connection with the annual session of the American Medical Association in St. Louis.

Dr. Irvin Abell, President of the Association, will broadcast over the Blue network of the National Broadcasting Company, Monday, May 15, from 4:15 to 4:30 p. m. central standard time. His subject will be "American Medicine Today." Dr. Rock Sleyster, President-Elect, will broadcast over the Columbia Broadcasting System Monday, May 15, from 3:45 to 4 p. m. Dr. Sleyster will be interviewed by Miss Jane Stafford of Science Service.

Dr. W. W. Bauer, Director of the Bureau of Health Education of the American Medical Association, will broadcast over the Blue network of the National Broadcasting Company, Friday, May 19, from 4:15 to 4:30. He will present a summary of the scientific and sociological developments at the meeting.

ADDRESSES BY OFFICIAL STAFF

DR. W. W. BAUER:
May 9—Logan Howard Preschool Group, Wilmette, Ill.
May 10—Women's Club, Public Meeting, Racine County Medical Society, Racine, Wis.
May 29—South Carolina Public Health Association, Myrtle Beach, S. C.

DR. MORRIS FISHBEIN:
May 8—Arkansas Medical Society, Hot Springs.
May 18—Rotary Club, St. Louis.
May 23—Cornell University Medical School, New York.
May 23—County of Kings and Academy of Medicine, Brooklyn.
May 24—American Surgical Trade Association, Washington, D. C.
May 31—Nurses' Graduation, West Suburban Hospital, Chicago.

MR. JACK LAUX:
May 12—Community Clubs, Joliet, Ill.

DR. PAUL A. TESCHNER:
May 25—Ryburn Memorial Hospital Commencement, Ottawa, Ill.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—S. 840 has passed the Senate, with amendment, proposing that no law of the United States shall be construed to limit the power and authority of the Secretary of War, without reference to line of duty status, to require and incur obligations for hospitalization and medical treatment of persons in active military service, other than those treated in private hospitals or by civilian physicians while on furloughs or leaves of absence in excess of twenty-four hours. The President has signed H. R. 1776, providing for the assignment of medical officers of the United States Public Health Service for duty on vessels of the Coast and Geodetic Survey. H. R. 2320 has passed the Senate providing domiciliary care, medical and hospital treatment and burial benefits to certain veterans of the Spanish-American War, the Philippine Insurrection and the Boxer Rebellion.

Bills Introduced.—S. 2214, introduced by Senator Davis, Pennsylvania, and H. R. 5979, introduced by Representative Van Zandt, Pennsylvania, propose to amend title X of the Social Security Act providing for financial assistance to certain blind persons by adding a provision that the Social Security Board shall not disapprove any plan because it provides for financial assistance to blind persons having an annual cash income of not more than $1,200. S. 2215, introduced by Senator Davis, Pennsylvania, and H. R. 5980, introduced by Representative Van Zandt, Pennsylvania, propose to amend further title X of the Social Security Act by defining the term "needy individuals who are blind" to mean "blind persons in need as defined in a State plan." S. 2226, introduced by Senator Sheppard, Texas, proposes to extend without charge the benefits of the Public Health Service, including benefits other than those received at hospitals or stations of that service, to the wives and dependent children of officers and employees of the Lighthouse Service. S. 2232, introduced by Senator Sheppard, Texas, proposes to provide hospitalization and domiciliary care in Veterans' Administration facilities to retired enlisted men of the Army, Navy, Marine Corps and Coast Guard, who are war veterans, on parity with other war veterans. S. 2257, introduced by Senator Gurney, South Dakota, proposes to authorize the appropriation

of $1,000,000 for the construction of a veterans' hospital and diagnostic center in the first congressional district of the state of South Dakota. H. R. 2875, introduced by Representative Smith, Washington, proposes that pensions payable to widows and orphans of deceased veterans of the Spanish-American War, Boxer Rebellion or Philippine Insurrection shall be effective as of the date of death of the veteran if claim is filed within one year thereafter. H. R. 5977, introduced by Representative Lesinski, Michigan, proposes to provide pensions to members of the Regular Army, Navy, Marine Corps and Coast Guard varying with the extent of service-incurred disabilities resulting from injury or disease. H. R. 5978, introduced by Representative Sheppard, California, proposes to give to male nurses who served under contract with the War Department between April 21, 1898, and Feb. 2, 1901, the rights, privileges and benefits, including pensions, provided for female Army nurses under contract during the same period. H. R. 6041, introduced by Representative Hendricks, Florida, proposes to authorize an appropriation of $1,750,000 for the construction of a United States Veterans' Administration general medical-surgical hospital and domiciliary facility, with a capacity of at least 500 beds, on or as near to the central east coast of Florida as is feasible.

STATE MEDICAL LEGISLATION

Florida

Bills Introduced.—H. 174 proposes to require the State Board of Health to distribute salvarsan, neosalvarsan, arsphenamine, bismarsen, mapharsen, neoarsphenamine and sulpharsphenamine to the physician of any resident suffering from syphilis or kindred disease requiring the use of any of the drugs stated and financially unable to purchase the necessary drug. H. 419 proposes to require a practitioner of osteopathy to renew his license annually on or before January 1 with the osteopathic board and at that time to pay an annual renewal fee of $5. The bill also proposes to condition the renewal of a license to practice osteopathy on the presentation by the holder thereof of evidence that in the preceding year the licentiate has attended the two day educational program as conducted by the Florida osteopathic association, or its equivalent. H. 577 and S. 272 propose to authorize the State Board of Health to establish a home for the care and treatment of incurable children.

Illinois

Bills Introduced.—S. 332 proposes that corporations not for pecuniary profit organized under the laws of the state shall be liable on their contracts and for their negligence and the negligence of their officers, agents and servants in the course of their authorized duties and their employment. S. 390 proposes to enact a separate physiotherapy practice act and to establish an independent examining committee to examine and license persons to practice physiotherapy. The bill defines physiotherapy as "the method, art or science of treating the human body for hygienic or remedial purposes by the following methods: massage and manipulations with the hands or with any agency or instrument, and the use of such adjuncts as light, heat, air, water, diet, gymnastics and electricity."

Michigan

Bill Introduced.—H. 559 proposes to require all persons licensed to practice medicine, osteopathy or chiropractic to renew their licenses annually with their respective boards of examiners and at that time to pay annual renewal fees of $10. The bill proposes to condition renewal also on the presentation of evidence that the practitioner in the preceding year has attended recognized classes or clinics for the purpose of pursuing postgraduate study of subjects pertinent to his system of healing for not less than ten class hours of fifty minutes each.

Pennsylvania

Bills Introduced.—H. 1358 proposes to enact a law, to be cited as the "Pure Food, Drug and Cosmetic Act," to regulate the manufacture, sale, distribution or advertising of foods, drugs, cosmetics and devices. S. 661 proposes to require every physician attending a pregnant woman during the period of gestation or at delivery to take or cause to be taken a sample of her blood within fifteen days after the time of first examination and to submit the sample to an approved laboratory for a standard serologic test for syphilis. This bill was reported favorably and went to second reading in the senate, April 27. S. 662 was reported favorably to the senate, April 25, proposing to condition the issuance of a license to marry on the presentation by each party to the proposed marriage of a physician's certificate that he or she has submitted to an examination to determine the existence or nonexistence of syphilis and that in the opinion of the examining physician the party is not infected with syphilis or if so infected is not in a stage of that disease which is likely to become communicable.

South Carolina

Bill Introduced.—H. 845 proposes to authorize the organization of corporations to operate nonprofit hospital service plans whereby hospital care may be provided by the corporations through hospitals approved by the South Carolina Hospital Association to persons subscribing to the hospital service plans.

Wisconsin

Bill Introduced.—A. 719, to amend the pharmacy practice act, proposes that the act shall not interfere with the dispensing of drugs, medicines or other articles by physicians *in an emergency, provided only such drugs shall be kept in stock by a physician as are necessary for emergency use.* The present law provides that the act shall not interfere with the dispensing of drugs, medicines or other articles by physicians. This bill, if enacted, would seem to permit a physician to dispense only in an emergency.

WOMAN'S AUXILIARY

California

The auxiliary to the San Diego County Medical Association met at the University Club in San Diego with eighty members in attendance. A three-act comedy by Mrs. Willard Newman entitled "How Do You Like Your Medicine? or Can You Take It?" was presented.

Mrs. Frances Parish described the service given blind persons by the "seeing-eye dog," at a meeting of the auxiliary to the San Francisco County Medical Society January 17.

At the January meeting of the auxiliary to the San Joaquin County Medical Association, Miss Eileen Clark spoke on the "Function and Needs of the Juvenile Court in the Field of Child Guidance."

Mrs. William Renfry Hunt reviewed "Fifty Years a Country Doctor" by William MacCarthey at the January meeting of the auxiliary to the Santa Barbara Medical Society. Members attended a Forum on "Socialized Medicine," held by the American Association of University Women January 18.

At recent meetings of the auxiliary to the Santa Clara Medical Association, Dr. Edward Liston of Palo Alto spoke on "Medical and Hospital Insurance" and Dr. Walter H. Brown, professor of hygiene at Stanford University, on "Public Health, Past and Present."

Indiana

The auxiliary to the Marion County Medical Society held the annual dinner dance with the society January 10 at the Indianapolis Athletic Club with 480 doctors and their wives in attendance.

The auxiliary to the Vigo County Medical Society held a meeting in Terre Haute recently. Mr. Phil Brown gave an illustrated lecture on Williamsburg.

Minnesota

Dr. George A. Earl, president of the Minnesota State Medical Association, addressed the auxiliary to the association at the Women's City Club, St. Paul, February 1 on "The Medical Outlook." Mrs. W. B. Roberts is president.

Dr. J. M. Hayes addressed the auxiliary to the Hennepin County Medical Society February 3 on "Socialized Medicine."

The auxiliary to the Stearns-Benton Counties Medical Society met in St. Cloud February 9. Mrs. R. N. Jones reviewed "The Citadel." The auxiliary has placed *Hygeia* in eleven schools of these counties.

The auxiliary to the Washington County Medical Society met February 14. Mrs. E. Sydney Boleyn led a discussion of government-controlled medicine and Mrs. C. E. Proshek spoke on Czechoslovakia.

Mississippi

Mrs. Sidney Johnston reviewed "The Horse and Buggy Doctor" by Dr. Arthur E. Hertzler recently before the auxiliary to the Issaquena-Sharkey-Warren Counties Medical Society.

The auxiliary to the Fourth District Medical Society was organized by Mrs. John Howell, president of the auxiliary to the Mississippi Medical Association, February 9. Mrs. P. B. Brumby was elected president. Members of this group have already placed several subscriptions to *Hygeia* in the libraries and public schools of the district.

Pennsylvania

The auxiliary to the Allegheny County Medical Society met January 24. Mrs. Joseph P. Dobo spoke on socialized medicine. Judge Gustav L. Schramm of the Juvenile Court of Allegheny County also addressed the meeting.

The auxiliary to the Berks County Medical Society held its third Annual Health Conference in Reading January 21. Dr. Hugh P. Shellabear, president, Berks County Medical Society, awarded the prizes for the essay contest on "Why Is Health Education Necessary?" which was conducted in the county and city high schools. The films "Prevention of Burns to Children," "The Conquest of Diphtheria" and "The Control of Pneumonia" were shown. Mrs. Augustus S. Kech, president of the auxiliary to the American Medical Association, 1937-1938, addressed the meeting. Dr. Harry B. Corrigan spoke on "Communicable Diseases and Their Prevention."

The auxiliary to the Chester County Medical Society met in West Chester January 17. Mrs. Joseph Scattergood Sr. discussed the proposed National Youth Administration project at Darlington Seminary, West Chester, for the care of fifty girls, aged from 17 to 30, from families on relief from the five counties of southeastern Pennsylvania. This project offers an opportunity somewhat similar to that for boys in the CCC camps.

The auxiliary to the Delaware County Medical Society was the guest of the society at its annual meeting January 12. The speaker was Mr. David McCahan, of the University of Pennsylvania, whose subject was "Building and Insuring the Family Financial Program." It was voted to donate ten subscriptions to *Hygeia* to be placed in schools and libraries of Delaware County. Mrs. Arthur Whitney discussed socialized medicine.

INCREASING SICKNESS IN SCOTLAND

The Department of Health for Scotland has recently issued the "Seventh Report on Incapacitating Sickness in the Insured Population of Scotland." This covers the period from July 1, 1936, to June 30, 1937, during which there was an average incapacity per insured due to sickness of 14.92 days per insured person. Part of the increase in the year 1936-1937 is due to an excess of influenza cases, but when this disease is excluded there is an increase from 8.8 days in 1931-1932 to 10.9 days in 1936-1937. Studies of similar bodies of employed workers in the United States over several years and including influenza gives an average of about 9.0 days lost through sickness per worker annually. It cannot be claimed that the absolute number of days is exactly comparable, as the Scottish statistics apparently include a larger percentage of chronic cases than those for the United States. The significant and apparently wholly justifiable basis of comparison would seem to be between the continuously increasing morbidity under insurance and the constant or slowly decreasing days of sickness under private practice.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Society News.—The Los Angeles County Medical Association was addressed April 6 by Drs. Steele F. Stewart Jr. on "Early Diagnosis and Treatment of Congenital Dislocation of the Hip"; Ward M. Rolland, "Supracondylar Fractures of the Elbow," and Harold E. Crowe, "Short Hospitalization of Fractures."——Among others, Dr. John J. Shea, Memphis, Tenn., addressed the Los Angeles Society of Ophthalmology and Otolaryngology April 17 on "Management of Fractures of the Face."——Dr. William D. Sansum, Santa Barbara, discussed "The Problem of the Underweight Patient" before the Hollywood Academy of Medicine April 13.

COLORADO

Personal.—Thomas Russell Garth, Ph.D., since 1930 professor of experimental psychology, University of Denver, died April 20. In 1912 Dr. Garth assisted in the Rockefeller Hookworm Investigation and in 1930-1931 headed the expedition to study color blindness of Indians, and in 1935-1937 the expedition to study the foster Indian child in white homes; he also served with other expeditions to study the psychology of the Indian since 1919.——Dr. William N. Beggs, Denver, was guest of honor at a dinner given by the Colorado medical alumni of Washington University April 8; he graduated in 1886.——Dr. Edward G. Billings, director of the liaison department of psychiatry, Colorado General Hospital, recently received $30,000 from the Rockefeller Foundation for the continuation of his work, according to the Denver *Medical Bulletin*.

GEORGIA

Changes in Health Officers.—Dr. Albert G. LeRoy, Atlanta, has been appointed commissioner of health of Toombs County, effective January 1, and Dr. Robert F. Young, Cartersville, of Bartow County. Dr. Garland L. Weidner has been chosen assistant health officer of Atlanta. Dr. Roland A. Brown, Macon, has been appointed assistant city-county health officer of Bibb County, succeeding Dr. Herbert F. Laramore, who has accepted a position on the staff of the U. S. Veterans' Hospital in Los Angeles, it is reported. Dr. Richard C. Shepard, La Fayette, has resigned as health commissioner of Catoosa and Walker counties, effective April 15, to engage in private practice.

District Meetings.—The Fifth District Medical Society held its spring meeting April 13 at the Academy of Medicine in Atlanta. Dr. Edgar Hill Greene, Atlanta, president, Fulton County Medical Society, gave the address of welcome. Drs. A. Benson Cannon, New York, and Grady N. Coker, Canton, president, state medical association, discussed "Comparative Value of Antisyphilitic Drugs" and "Modern Trends in Medical Practice" respectively. A symposium on the clinical aspects of pellagra was presented by Drs. Tom Douglas Spies, Cincinnati, Virgil P. W. Sydenstricker, Augusta, and James McLester, Birmingham, Ala.——The Tenth District Medical Society was addressed at Athens recently, among others, by Drs. John Weyman Davis, Athens, on "Treatment of Fractures of the Neck of the Femur" and Joseph Righton Robertson, Augusta, "Internal Urethrotomy."——Dr. Leo W. Koster, New York, discussed certain phases of surgery before the Second District Medical Society at Colquitt April 14.

ILLINOIS

Society News.—Dr. Roland M. Klemme, St. Louis, discussed "Neuralgias of the Head and Face: Differential Diagnosis and Treatment" before the Adams County Medical Society, Quincy, April 10. Dr. Franklin E. Walton, St. Louis, discussed "The Surgeon's Approach to Diseases of the Gallbladder" before the society recently.——The Peoria City Medical Society was addressed March 21 by Dr. James H. Hutton, Chicago, on "Diagnosis and Treatment of Neglected Endocrinopathies"; March 7 by Dr. Raymond M. Rice, Indianapolis, "Clinical Use of Female Sex Hormones," and February 21 by Dr. August A. Werner, St. Louis, "Influence of the Endocrines on Growth and Development."——Dr. Charles E. Galloway, Evanston, Ill.,

discussed "Pathology of the Cervix" before the Sangamon County Medical Society, Springfield, April 6.——Drs. Howard A. Rusk and Harold G. Newman, St. Louis, addressed the Marion County Medical Society, Centralia, April 20, on "Diagnosis and Treatment of Undulant Fever."

Chicago

Pneumonia Service.—A twenty-four hour service for the distribution of pneumonia serum and typing of sputum from pneumonia patients has just been established by the Chicago Board of Health. While the twenty-four hour service is available to physicians only at the department's branch laboratory at the Municipal Contagious Disease Hospital, the service will be available at the central laboratory, located in the city hall, room 707, during specified hours. Detailed information may be obtained from the department of health.

INDIANA

New State Program in Psychiatry.—The state department of public welfare recently inaugurated a program to establish part time mental hygiene clinics to serve most of the communities in Indiana. With the approval of the state medical society, five physicians were given membership in the Indiana Council on Mental Hygiene to be a liaison group between the department of public welfare and the profession. In counties where it is proposed to offer services of a mental hygiene clinic team, the program is first submitted to the county medical society and only after an invitation has been extended by the society is a clinic established. Dr. Exie E. Welsch, who has been directing the mental hygiene program of the bureau of maternal and child health of the state board of health, has been transferred to the bureau of mental care of the state department of public welfare. She will assist Dr. George C. Stevens, director, division of medical care, in organizing the clinics. The liaison committee and the committee on mental health of the state association have agreed that there was no need for two distinct mental hygiene programs with similar aims being conducted in the state board and the department of public welfare.

IOWA

Personal.—Dr. Joseph M. Casey, Fort Madison, was guest of honor at a banquet given by the Fort Madison Medical Society recently in recognition of his completion of fifty years in the practice of medicine.——Dr. Henry A. Meyers, Davenport, was presented with a gold wrist watch by the Scott County Medical Society at a meeting January 3 following his resignation as secretary; he had held the position since 1930.

Public Meetings.—Dr. Ludvig Hektoen, Chicago, executive director, National Advisory Cancer Council, addressed a public meeting at the Hoyt Sherman Place, Des Moines, recently. The meeting was sponsored by the Iowa division of the Women's Field Army, Iowa. Dr. Thurman B. Rice, Indianapolis, gave a public lecture March 5 on "Problems of Sex Education."

KANSAS

Society News.—Dr. Axel N. Arneson, St. Louis, discussed "Treatment of Cancer of the Body of the Uterus" before the Shawnee County Medical Society April 10 in Topeka.—— Dr. John M. Waugh, Rochester, Minn., addressed the Sedgwick County Medical Society, Wichita, April 4, on "Management of the Acute Abdomen."

Society Observes Fiftieth Anniversary. — The Golden Belt Medical Society observed its fiftieth annual meeting at Junction City April 13; the speakers were Drs. Arthur E. O'Donnell, who reported a case of screw worm in the nose; Thomas G. Orr, Kansas City, Mo., "Treatment of Peritonitis"; Jacob A. Bargen, Rochester, Minn., "Medical and Preoperative Management of Intestinal Obstruction," and John M. Porter, Concordia, "A Kansas Society Fifty Years Old."

Postgraduate Courses.—A series of postgraduate courses is being held throughout the state under the auspices of the state medical society and the state board of health with the assistance of social security funds. A four week course in obstetrics and pediatrics opened March 20, to reach Beloit, Smith Center, Hays, Ellsworth and Abilene. Drs. William F. Mengert and John H. Randall, Iowa City, are giving the instruction in obstetrics, and Drs. Jean V. Cooke, St. Louis, and Julian D. Boyd, Iowa City, the instruction in pediatrics. A similar course was scheduled for Leavenworth, Sabetha, Clay Center, Wamego and Lawrence, and the instructors were Drs. William J. Dieckmann and Morris Edward Davis, Chicago, in obstetrics and Mandel L. Spivek, Chicago, pediatrics. A course opened March 9 on venereal disease; it was to continue through April 21 with Dr. Joseph V. Van Cleve, Wichita, as the speaker. Dr. Nathan A. Womack, St. Louis, conducted the postgraduate course on cancer control, which began March 20.

KENTUCKY

State Board Sponsors Radio Program.—The Kentucky State Board of Health inaugurated a series of fifteen-minute radio broadcasts over station WHAS, Louisville, in March. The programs are broadcast Saturday afternoons at 4:45 central standard time. The first program reviewed the organization of the Kentucky State Medical Association and the state board of health and the series continues with dramatizations of the present activities of both organizations.

Society News.—Dr. Percival Bailey, Chicago, delivered the annual Alpha Omega Alpha Lecture of the Jefferson County Medical Society April 21 on "Indications for Operation in Cases of Tumor of the Brain." Drs. George A. Hendon and Pat R. Imes, Louisville, addressed the society April 17 on "Multiple Abscesses of the Liver" and "Immediate Treatment of Automobile Injuries" respectively.——George F. Cartland, Ph.D., Kalamazoo, Mich., addressed the Louisville Obstetrical and Gynecological Society April 24 on "Pituitary Ovarian Relationship with Reference to Use of Pregnant Mare Serum in Therapy."——Dr. Morris Edward Davis, Chicago, addressed a joint meeting of the Jefferson County Medical Society and the Louisville Obstetrical and Gynecological Society, March 6, on "Present Day Treatment of Hemorrhage Late in Pregnancy."

LOUISIANA

Southern Hospital News.—The new eight story addition to the Baptist Hospital, New Orleans, adding seventy-four beds to the 200 bed institution, has been completed at a cost of about $180,000.

Society News.—Dr. Charles J. Bloom, New Orleans, addressed the Iberville Parish Medical Society at Plaquemine March 3 on "Appendicitis in Infancy and Children."——Dr. Jay W. Cummins, Monroe, addressed the Ouachita Parish Medical Society recently on "The Rationale of Blood Transfusion" and Dr. Robert M. Simonton, "The Toxicology of Sulfanilamide." —— Among others, Dr. Eugene M. Robards Jr. addressed a recent meeting of the Bi-Parish Medical Society at Jackson on "Involutional Melancholia and the Depressive Manic State."——It was decided at the recent annual meeting of the Tuberculosis and Public Health Association to hold the sixteenth annual session in Monroe; this will be the first time the meeting has been held out of New Orleans.——The Orleans Parish Medical Society held its joint scientific and first quarterly executive meeting April 10; the speakers were Drs. John H. Musser and Robert A. Wise on "Bacillus Pyocyaneus Meningitis, a Report of Six Cases"; Clyde Brooks, "Toxicity of Sulfanilamide and Related Compounds," and Dean H. Echols, "Tic Douloreux."——Dr. Michael E. DeBakey addressed the East Baton Rouge Parish Medical Society April 12 on "Surgical Amebiasis."

MAINE

Osteopaths Defeated in Maine Legislature.—The Maine legislature has just defeated the legislative document (H. P. 1706) (L. D. 873) which required hospitals receiving public funds to admit osteopathic physicians to practice, to treat and care for their patients and to furnish laboratory service for osteopathic physicians. The committee reported "ought not to pass" 7 to 3. After a long debate, the bill was defeated 72 to 26.

MASSACHUSETTS

Society News. — Dr. Meredith F. Campbell, New York, discussed "Urogenital Diseases of Infants and Children" before the Worcester District Medical Society April 12.

Health Week in Worcester.—The first "Worcester health week" was observed March 4-10 under the auspices of the health education committee of the local Young Men's Christian Association in cooperation with many other organizations. About thirty-eight health talks were scheduled in cooperation with the Worcester District Medical Society and about twenty-four showings of films related to health topics.

MICHIGAN

Society News.—Dr. Samuel M. Feinberg, Chicago, discussed "Mold Allergy" before the Michigan Allergy Society, Ann Arbor, March 16.——Dr. Plinn F. Morse, Detroit, discussed "Causes of Sudden Death" before the Ingham County Medical Society March 21.——Dr. John Warrick Thomas, Cleveland, addressed the Jackson County Medical Society in Jackson April 18 on "Allergy in General Practice."

Changes in State Health Department.—A new branch laboratory of the Michigan Department of Health was recently established in the Pinecrest Sanatorium at Powers. Dr. Filip C. Forsbeck, director of the bureau of epidemiology, resigned to accept a position with the U. S. Public Health Service, effective March 1. Dr. Forsbeck will make a study of dysentery in the Ohio River Valley; his headquarters will be in Cincinnati. Dr. Arthur W. Newitt, Lansing, who has been chief of the division of tuberculosis, has been appointed acting director of the division of epidemiology.

The State of Health.—The general death rate in Michigan in 1938 was 9.9, according to provisional figures published in the state medical journal. There were 50,470 deaths reported as compared with 53,468 in 1937. The birth rate was 18.7; the total number of births was 95,385 as compared with 91,566 in 1937. A new low point was established for infant mortality with a rate of 45.14 deaths per thousand live births. The maternal mortality rate was 3.56 deaths per thousand live births. Deaths caused by automobile accidents dropped to tenth place. This group totaled 1,444 in 1938 as compared to the all time high total of 2,175 in 1937. Deaths from tuberculosis declined from 2,119 in 1937 to 1,865 in 1938.

Neuropsychiatric Institute Dedicated.—The Neuropsychiatric Institute of the University Hospital, Ann Arbor, was opened February 11 with Alexander G. Ruthven, Ph.D., president of the university, presiding. Dr. Rock Sleyster, Wauwatosa, Wis., President-Elect, American Medical Association, gave the dedicatory address. The institute is a five story wing adjoining the hospital on the north with facilities for the care of sixty adult patients and twenty-three children. There are also increased teaching facilities, including an auditorium seating 140 persons on the subbasement floor and classrooms on two other floors. A large portion of the building will be devoted to research, and the neuropathologic laboratory and photographic department, which will also take care of the photography for the main hospital, are both especially well equipped, according to the *University Hospital Bulletin*. By a recent act of the state legislature, the institute will treat only voluntary patients and committed patients will not be admitted. The study and treatment of incipient or threatened mental disease will be emphasized and research will be directed toward the preventive aspects of psychiatry.

NEW MEXICO

State Medical Meeting at Gallup.—The fifty-seventh annual meeting of the New Mexico Medical Society will be held at the El Rancho Hotel, Gallup, May 11-13, under the presidency of Dr. Eugene W. Fiske, Santa Fe. Governor John E. Miles will deliver the address of welcome. Other speakers will include:

Dr. Robert W. Lamson, Los Angeles, Allergy and Pseudo-Allergy in General Practice.
Dr. William Philip Corr, Riverside, Calif., The Management of Diabetes.
Dr. Benjamin H. Orndoff, Chicago, Early Changes in the Endometrium, Diagnosis and Management.
Dr. Henry J. Goubeaud Jr., Brooklyn, Ruptured Uterus.
Dr. Jack G. Hutton, Denver, The Diagnosis of Syphilis.
Dr. Nelson Paul Anderson, Los Angeles, The More Common Skin Diseases.
Dr. Ralph M. Stuck, Denver, Spinal Injuries with Nerve Damage.
Dr. Rollin Russell Best, Omaha, The Physiological Biliary Flush as an Aid in the Management of Biliary Tract Disease.
Dr. George B. Kent, Denver, The Proper Management of Surgical Lesions of the Biliary Tract.
Dr. E. Payne Palmer, Phoenix, Ariz., Suspicious Cancer Symptoms.
Dr. Harold L. Thompson, Los Angeles, The Surgical Treatment of Peptic Ulcer.
Dr. Paul J. Connor, Denver, Objective Signs in the Diagnosis of Endocrinopathies.
Dr. Howard F. West, Los Angeles, Symptomatology and Etiology of Spontaneous Hypoglycemias.
Dr. Oscar B. Nugent, Chicago, Eye Conditions of Interest to the General Physician.
Dr. Francis C. Goodwin, El Paso, Texas, Use of Bone Traction in Scoliosis.
Dr. Jacob Travis Bennett, El Paso, Common Feeding Difficulties in Pediatric Practice.
Dr. William H. Daniel, Los Angeles, Proctology for the General Practitioner.
Dr. Charles H. Arnold, Lincoln, Neb., Splanchnic and Brachial Block Anesthesia.
Dr. Romeo J. Lajoie, Los Angeles, Angina Pectoris.

There will be round table luncheons Thursday and Friday. Entertainment will include a buffet dinner, the annual smoker, dinner dance, reception, luncheon and motor trip.

NEW YORK

New Tumor Clinic.—The Samaritan Hospital, Troy, opened a tumor clinic April 6 with Dr. Victor C. Jacobsen, associate professor of medicine, Albany Medical College, as director. Dr. Jacobsen will be consultant in pathology, Dr. William J. Hoffman, New York, consultant in neoplastic diseases, and Robert A. Patterson, Ph.D., Troy, consultant in biophysics. Sessions will be held every Thursday morning.

New York City

Hospital News.—Dr. Charles Rosenheck delivered the annual memorial address to commemorate the life and work of Dr. Henry W. Frauenthal, founder of the Hospital for Joint Diseases, March 7.——Dr. Howard Fox gave a lecture at Beth Israel Hospital recently on experiences of a dermatologist in the tropics.

Stock Exchange Discontinues Medical Department.—The medical department of the New York Stock Exchange was discontinued as an Exchange activity April 1, newspapers reported recently. Dr. Francis H. Glazebrook, medical director since 1931, has retired and Dr. Robert S. Millen, Westbury, N. Y., will take over the quarters and operate a clinic on his own behalf, it was announced.

Society News.—Speakers at a meeting of the New York Roentgen Society April 17 were Drs. Marcy L. Sussman, Simon Dack and Arthur M. Master on "The Roentgen Diagnosis of Myocardial Infarction" and Dr. William Snow, "X-Ray Visualization of Soft Structures of Pregnancy."——A symposium on eugenics and genetics was recently presented at a meeting of the International and Spanish-Speaking Association of Physicians by Maurice A. Bigelow, Sc.D., and Norman E. Hines, Ph.D., Hamilton, N. Y., and Benjamin C. Gruenberg, Ph.D.——A symposium on the prevention and treatment of automobile accidents was presented before the Medical Society of the County of New York recently; the speakers were John J. Seery, first deputy police commissioner, and Carroll E. Mealey, commissioner, bureau of motor vehicles, New York State, and Drs. David J. Kaliski, Conrad Berens and John J. Moorhead.——The New York Surgical Society devoted its meeting April 12 to a symposium on duodenal ulcer; the speakers were Drs. Richard Lewisohn, James William Hinton, Roland L. Maier and John J. Westermann Jr.

Medical Committees for the Fair.—The committees in charge of arranging medical and health exhibits for the New York World's Fair include the following in addition to those published in THE JOURNAL, April 22, p. 1609:

Dr. Wilson G. Smillie, exhibit on health administration, sponsored by the American Public Health Association.
Dr. Adolph G. G. De Sanctis, child health, growth and development committee, Mead Johnson & Co.
Waite A. Cotton, D.D.S., dentistry and oral hygiene committee, Dental Society of the State of New York.
John Mohler, D.V.M., veterinary safeguards and public health, American Veterinary Medical Association.
Dr. Harvey B. Matthews, maternal health, Maternity Center Association.
Dr. Howard W. Haggard, New Haven, Conn., maze of superstitions, the Bayer Company.
Dr. Milton J. Rosenau, Chapel Hill, N. C., milk control, Cherry-Burrell Corporation.
Dr. Francis M. Rackemann, Boston, allergy, Lederle Laboratories, Inc.
Charles-Edward A. Winslow, Dr.P.H., New Haven, Conn., health in the home, the John B. Pierce Foundation.
Leonard Greenburg, Ph.D., industrial sanitation, West Disinfecting Company.
Dr. Daniel B. Kirby, conservation of sight and education of the blind, New York Institute for Education of the Blind.

Dr. Putnam Appointed Professor of Neurology—Other Changes.—Dr. Tracy J. Putnam, since 1934 professor of neurology, Harvard Medical School, Boston, has been appointed professor of neurology and neurosurgery in Columbia University College of Physicians and Surgeons, effective October 1. He will also serve as director of services of neurology and neurosurgery at the Neurological Institute of the Columbia-Presbyterian Medical Center. Dr. Vernon W. Lippard, director of the Commission for Study of Crippled Children of the City of New York, has been appointed assistant dean of the medical college. According to an announcement, Drs. Charles A. Flood and Lawrence W. Sloan have resigned as assistant

deans to enter private practice. A native of Boston, Dr. Putnam took his medical degree at Harvard in 1915. He was Moseley traveling fellow at the University of Amsterdam, 1924-1925; Arthur Tracy Cabot fellow in charge of laboratory of surgical research at Harvard, 1925-1926; associate in surgery, Peter Bent Brigham Hospital, 1925-1928. Becoming assistant in surgery at Harvard in 1926, he subsequently served in various capacities until 1934, when he was named professor of neurology. He was visiting neurologist to the Boston City Hospital for many years. Dr. Lippard was born in Marlboro, Mass., in 1905 and graduated at Yale University School of Medicine, New Haven, in 1925. He has been associate attending pediatrician at New York Hospital and associate in pediatrics at Cornell University Medical College.

OHIO

Society News.—Dr. Henry L. Bockus, Philadelphia, addressed the Academy of Medicine of Cleveland April 21 on the diagnosis and treatment of jaundice. Dr. Leroy U. Gardner, Saranac Lake, N. Y., discussed silicosis before the academy recently.

Changes in Hospital Superintendents.—Dr. Fred G. Carter, superintendent of Christ Hospital, Cincinnati, has been appointed superintendent of St. Luke's Hospital, Cleveland, to succeed Dr. Charles S. Woods, who has resigned. Dr. Charles T. Way has been named medical director of St. Luke's and Dr. Willard C. Stoner, medical director for many years, is now medical consultant. Dr. Carter went to Cincinnati in 1935 from St. Paul, where he was for ten years superintendent of Ancker Hospital. He has been president of the Minnesota Hospital Association, the American College of Hospital Administrators and the Ohio Hospital Association; he is now president-elect of the American Hospital Association. To succeed Dr. Carter at Christ Hospital in Cincinnati, Dr. Merrill F. Steele, superintendent of Grant Hospital, Columbus, has been selected.

OKLAHOMA

Society News.—Drs. Rufus Q. Goodwin and Wilbur Floyd Keller, Oklahoma City, addressed the Pottawatomie County Medical Society, Shawnee, April 15 on "Clinical and Therapeutic Aspects of Anemia" and "The Pathology of Anemia" respectively.——Drs. Alfred R. Sugg and Ennis M. Gullatt, Ada, addressed the Pittsburg County Medical Society recently on "Perinephritic Pathology" and "Empyema" respectively.——Drs. Alvin Ray Wiley and Victor K. Allen, Tulsa, addressed the Muskogee County Medical Society recently on "Relation of Endocrines to Neoplasms of the Breast" and "Individual Technic in Anorectal Surgery" respectively.

PENNSYLVANIA

Dr. Wyant Honored.—Dr. John B. F. Wyant, Kittanning, was honored by the school children of the city March 28 in recognition of his completion of fifty years in the practice of medicine and for his interest in school health. He was presented with a radio and a plaque. A floral tribute was presented to the physician by the Armstrong County Medical Society, for which he has been secretary for nearly forty years. Dr. Wyant also served fifteen years as a member of the board of trustees of the state medical society and acted as chairman of the board for several years.

Philadelphia

Dr. Hamill Receives Strittmatter Award.—Dr. Samuel McClintock Hamill was awarded the Dr. I. P. Strittmatter Gold Medal by the Philadelphia County Medical Society April 12. Dr. Hamill, who has practiced in Philadelphia since 1890, has been active in child welfare work for many years. Among other activities he was chairman of section I on medical service of the Hoover White House Conference on Child Health and Protection and during the past four years was chairman of the Pennsylvania Emergency Child Health Committee. He has served as president of the American Academy of Pediatrics, the American Pediatric Society and the Philadelphia Pediatric Society, as chairman of the Section on Diseases of Children of the American Medical Association and was the first chairman of the section on pediatrics of the Medical Society of the State of Pennsylvania. In addition he was president of the American Association for the Study and Prevention of Infant Mortality in 1915 and again under its later name, the American Child Health Association, from 1931 to 1935. From 1901 to 1919 he was professor of diseases of children at the old Philadelphia Polyclinic and College for Graduates in Medicine and for another year at the University of Pennsylvania Postgraduate Department of Medicine.

Pittsburgh

Society News.—Dr. Allen O. Whipple, New York, delivered the Stewart Memorial Lecture of the Pittsburgh Academy of Medicine March 28 on "Diagnosis and Treatment of Pancreatic Lesions."——Dr. Albert D. Kaiser, Rochester, N. Y., addressed the Pittsburgh Pediatric Society April 14 on "Certain Phases of the Tonsil Problem in Children."——Speakers at a meeting of the Allegheny County Medical Society April 18 were Drs. Harry M. Margolis, on "Protrusions of Lumbar Intervertebral Disks as a Cause of Low Back and Sciatic Pain"; Louis H. Landay, "Coronary Heart Disease"; Joseph H. Barach and Lazarus Lewis Pennock, "Diagnostic Value of Occult Hematuria: Based on a Study of 3,000 Urinary Sediments," and Maximilian H. Weinberg, "Recent Advances in Neuropsychiatry."——A symposium on "Spastic Paralysis (Cerebral Birth Paralysis)" was presented before the Pittsburgh Orthopedic Club April 26 by Drs. Paul Titus, Samuel S. Allen Jr., John A. Heberling and Jessie Wright.

SOUTH CAROLINA

State Medical Election.—Dr. William L. Pressly, Due West, was chosen president-elect of the South Carolina Medical Association at the annual meeting in Spartanburg April 13 and Dr. Douglas Jennings, Bennettsville, was installed as president. Dr. Clough H. Blake, Greenwood, was elected vice president and Dr. Edgar A. Hines, Seneca, was reelected secretary for his thirtieth year. The 1940 meeting will be held in Charleston.

TENNESSEE

State Medical Election.—Dr. William O. Baird, Henderson, was elected president of the Tennessee State Medical Association at the annual meeting in Jackson April 14. Vice presidents elected were Drs. Julian G. Price, Dyersburg; Robert B. Gaston, Lebanon, and James E. Carson, Maryville. The 1940 meeting will be in Chattanooga.

Society News.—Dr. Virgil P. W. Sydenstricker, Augusta, Ga., addressed the Southern Interurban Clinicians Club in Nashville recently on "Hemolytic Icterus Following Splenectomy for Thrombocytopenic Purpura"; Dr. Sydenstricker was president of the club during 1938.——Drs. Henry L. Douglass and Robert H. Williams addressed the Nashville Academy of Medicine and Davidson County Medical Society, Nashville, March 28, on "Exstrophy of the Bladder" and "Results of Fever Therapy at Vanderbilt Hospital" respectively.——Drs. Henry G. Rudner and Robert L. Sanders, Memphis, Tenn., addressed the Dyer-Lake-Crockett Counties Medical Society, Dyersburg, March 1 on medical and surgical management, respectively, of common diseases of the colon, and Dr. Edward B. Smythe, Tiptonville, on "Henoch's Purpura."

GENERAL

Society News.—The eighteenth annual convention of the American Physiotherapy Association will be held at the Hotel Cosmopolitan, Denver, June 25-30.——Dr. Irvin Abell, Louisville, Ky., President of the American Medical Association, was chosen president-elect of the Southeastern Surgical Congress at the annual meeting in Atlanta, Ga., in March. Dr. Grady E. Clay, Atlanta, was elected vice president and Dr. Benjamin T. Beasley, Atlanta, reelected secretary. Dr. Robert L. Sanders, Memphis, Tenn., became president for the coming year.

Hospital in India Needs Woman Physician.—The Woman's Hospital at Gauhati, Assam, in northeastern India is in urgent need of a woman physician, according to an announcement. The hospital has forty-five beds and during 1938 cared for 700 inpatients. Those interested should be able to do surgical work. There are two American nurses on the staff, two Indian women physicians, eight Indian staff nurses and twenty-six nurses in the training school. Laboratory and x-ray equipment are available. The hospital is under the Woman's American Baptist Foreign Mission Society. Applications and inquiries may be addressed to the Christian Medical Council, 156 Fifth Avenue, or to Miss Hazel F. Shank, 152 Madison Avenue, New York.

Medal Awarded to Eve Curie.—The Clement Cleveland Medal was presented to Eve Curie, Paris, France, at a dinner given by the New York City Cancer Committee at the Cos-

mopolitan Club April 18. In making the presentation, Dr. Francis Carter Wood, director of the Crocker Institute of Cancer Research, Columbia University, stated "Those in charge of this award, to be given to one who has achieved most during the year in our contest against cancer, are unanimously of the view that it should be given to the author of the 'Life of Madame Curie'—your rare achievement in writing so superb a life of your mother." According to the New York *Times*, this was the first foreign award of the Clement Cleveland Medal for distinguished service to public education on cancer control.

Young Physician Disappears.—Dr. Runyon H. Irvin, Mt. Vernon, Ill., disappeared from his home March 31. A reward is offered by the chief of police of Mt. Vernon and by his father, Mr. Grant Irvin, telephone 1015, Mt. Vernon, for information as to his whereabouts. Dr. Irvin is 31 years old, 5 feet 11 inches tall, weighs 150 pounds, has a fair complexion, blue eyes, light hair, white teeth with gold fillings. He was wearing a long light gray overcoat, a brown suit, a dark gray hat and black shoes size 11. He is said to be well mannered and genial and does not use tobacco or intoxicants. He had recently suffered a nervous breakdown. Any message concerning him should be telephoned collect to his parents.

Fellowships Awarded.—Twelve fellowships in the medical sciences, including three renewals, for study in the United States and abroad during the year 1939-1940, were awarded at the February meeting of the medical fellowship board of the National Research Council, Washington, D. C. A list of the successful candidates and institutions where they are to work follows:

Philip P. Cohen (renewal), University of Sheffield, England.
Thomas Harrison Davies (renewal), California Institute of Technology.
Victor M. Emmel, Yale University Medical School.
Dr. Alto E. Feller, Harvard Medical School, Boston.
Arden Howell, Duke University, Durham, N. C.
Fremont Ellis Kelsey, University of Pittsburgh.
Dr. Abe Ravin, Harvard, Boston.
Joseph Shack, Johns Hopkins University School of Medicine, Baltimore.
William M. Wallace, Harvard, Boston.
Wilfred W. Westerfeld (renewal), Eidgenossische Technische Hochschule, Zurich, Switzerland.
Richard Winzler, University of Stockholm, Sweden.
Dr. William Barry Wood Jr., Harvard.

American Heart Association.—The fifteenth scientific session of the American Heart Association will be held in St. Louis at the Hotel Jefferson May 12-13. The Lewis A. Conner lecture will be delivered by Dr. Harry Goldblatt, Cleveland, on "Experimental Observations on the Pathogenesis and Treatment of Essential Hypertension." Dr. Cecil K. Drinker, Boston, will present the George Brown Memorial Lecture on "Physiological Considerations of the Formation and Movements of Lymph." Other speakers on the program include:

Drs. James Allen Kennedy, Nashville, Tenn., and Charles Sidney Burwell, Boston, Factors in the Circulatory Changes Associated with Pregnancy.
Dr. Henry A. Schroeder, New York, Importance of Restriction of Salt as Compared to Water in Cardiac Failure.
Bradley M. Patten, Ph.D., Ann Arbor, Mich., Microcinematographic and Electrocardiographic Study of the First Heart Beats and the Beginning of the Circulation in Living Embryos.
Dr. Donald Y. Solandt, R. Nassim, M.B., and Dr. Charles H. Best, Toronto, Effect of Heparin in the Prevention of Thrombosis Experimentally Produced in Various Blood Vessels.
Dr. Reginald H. Smithwick, Boston, Immediate Effects and Late Results of Sympathetic Denervation of the Upper Extremity by Preganglionic Section.

Alumni Meetings in St. Louis.—The Missouri Medical College, class of 1899, will have a table at the Washington University Medical School Alumni banquet May 17 in the Gold Room of the Hotel Jefferson during the Annual Session of the American Medical Association in St. Louis.——The Phi Delta Epsilon fraternity will hold a dinner dance at the Hotel Chase May 17 at 7:30. Additional information may be obtained from Dr. Sam D. Soule, 4500 Olive Street, St. Louis.——Alumni of Northwestern University Medical School, Chicago, are holding a dinner in the Hotel Jefferson, St. Louis, May 17, at 6:30 p. m. Dr. George F. Rendelman, St. Louis, class of 1915, is chairman in charge. Dr. John A. Wolfer, Chicago, class of 1908, is president of the medical division of Northwestern University Alumni Association.——A dinner will be held in the main dining room of the Hotel Statler, Ninth Street and Washington Avenue, St. Louis, Wednesday evening May 17 at 7 o'clock by the Jefferson Medical College Alumni, for which all Jefferson alumni are requested to make reservations at convention headquarters. The dinner will be à la carte. Dr. Theodore P. Brookes, 1650 South Grand Boulevard, St. Louis, is chairman of the Alumni and Fraternity Reunion Committee.

FOREIGN

Dr. Loewi in Belgium.—Information has been received that Dr. Otto Loewi, formerly of the University of Graz, Austria, and co-winner of the Nobel Prize in medicine and physiology in 1936, has been released from Germany. He may be addressed in care of Club de la Fondation Universitaire, Rue d'Egmont, Brussels, Belgium. Before being released he was deprived of all his property, both inside and outside of Germany, including his Nobel Prize money, which had never been in Germany or Austria. His wife is still detained in Germany.

International Tuberculosis Conference.—The Eleventh Conference of the International Union Against Tuberculosis will be held in Berlin September 16-20 under the presidency of Prof. Lopo de Carvalho, Lisbon, Portugal. The subjects to be discussed are: "The Problem of the Virulence of the Tubercle Bacillus," "The Value of Systematic Examinations for the Detection of Tuberculosis in Subjects Over 15 Years of Age" and "The Rehabilitation of the Tuberculous." Speakers from the United States include Dr. Kenneth C. Smithburn, New York; Dr. Willard B. Soper, New Haven, Conn., and Dr. Henry Kennon Dunham, Cincinnati. Correspondence should be addressed to the Konferenzleitung der XI Konferenz der Internationalen Vereinigung zur Bekampfung der Tuberkulose, Berlin W 62, Einemstrasse 11, Germany.

Government Services

Colonel Magee Named Surgeon General of the Army

Col. James Carre Magee, Medical Corps, U. S. Army, has been appointed surgeon general of the U. S. Army with the rank of major general. He succeeds Major General Charles R. Reynolds, whose term as surgeon general expires May 31. Colonel Magee was born in Ireland in 1883. He graduated at Jefferson Medical College, Philadelphia, in 1905. In 1907 he joined the army as contract surgeon, serving for a time in the medical reserve corps of the army. In 1909 he was commissioned first lieutenant in the medical corps of the army, subsequently advancing through the various grades until 1935, when he was commissioned colonel.

Examination for Appointment in Medical Corps

The War Department announces that an examination will be held July 17-21 to qualify candidates for appointment as first lieutenants in the medical corps, regular army, to fill vacancies occurring during the next fiscal year. Due to the expansion of the air corps and coast defenses with the proportionate increase in officers of the medical corps, it is anticipated there will be considerably more than the usual number of vacancies. The examination is open to all male graduates of acceptable medical schools who have completed one year's internship in an approved hospital and who will not be over 32 years of age at the time it will be possible to tender a commission. It will be conducted by boards of medical officers convened throughout the United States and will consist of a physical examination, a written examination in professional subjects and a determination of the candidate's adaptability for military service. For additional information and application blanks address the Adjutant General, War Department, Washington, D. C. Applications will not be considered after June 30.

Foreign Letters

LONDON

(From Our Regular Correspondent)

April 8, 1939.

Limitation of Population Without Contraception

The most striking demographic phenomenon of the countries of western Europe is a fall in the birth rate of about 50 per cent in the last sixty years. In England the usually accepted cause is the use of contraceptives, though others, such as the change in the national diet from whole meal to white bread (producing shortage of vitamins B and E), were suggested at a discussion on the subject held at the Royal Society of Medicine (THE JOURNAL, March 19, 1938, p. 908). The use of contraceptives is undoubtedly an important cause, but its numerical importance is not known. In the want of exact knowledge on this point it is of great interest to turn to a neighboring country which shows a similar fall but in which contraception can be practically excluded. Eire is a Roman Catholic country and the people obey the teaching of their church, which condemns contraception. Moreover, the government has made the sale of contraceptives a serious criminal offense. Yet the carefully compiled analysis of the 1936 census, which has just been published, shows a small decline of population. This has not yet occurred in England but is imminent. In the two countries there is a similar decrease in the proportion of the young in the population and increase in the proportion of the old. In Eire, with a population of 3 million, the total decrease since the last census ten years ago is 3,500, but the numbers under the age of 21 years have fallen by 69,000 and under 15 by 47,000. A continuous trend toward an aging population has been in progress since the famine 100 years ago and is partially explained by emigration. The other factor—which indeed is the dominant one of the statistics—is late marriage. Between the ages of 25 and 29 as many as 82 per cent of males are single. This is the highest percentage in Europe and contrasts with 68 per cent in Austria, 47 per cent in England and Wales and 37 per cent in the United States. The percentage of unmarried females and their average age are higher than in most countries. With this handicap it may seem surprising that the decline of population is so small. The explanation is the high degree of fertility of those who do marry, which again is evidence of the absence of contraception. Thus the economic cause, which is limiting population in other western countries, operates, but in a different way.

Regionalization of the Public Health Service

A scheme for regionalization of the public health service has been formulated and in consequence of the international situation is rapidly being brought into force. For this purpose England has been divided into five regions, and a principal regional medical officer has been appointed for each region. He will be assisted by a small team of medical officers selected from the staff of the Ministry of Health. The new arrangement does not involve any substantial alteration in the duties which the medical officers of the department perform at present or in their relations with local authorities, but it is believed that the existence of regional staffs, who will be more familiar with local circumstances and problems than officers stationed permanently at headquarters, will be of great assistance. It is hoped also that local authorities and their officers will find it convenient to be able to refer to principal medical officers in their own regions questions of a medical or quasimedical nature. But there is a still more important reason. The regional scheme is an essential element in the preparations which the ministry is making to provide medical services for a possible national emergency. Its advantages are obvious if an air attack on London should produce any dislocation of the central control. The scheme does not involve any major change in the work of the senior medical officers at the ministry, who are responsible for special services, such as maternity and child welfare and tuberculosis, though it is hoped that they will be relieved of some routine work. In addition to their general duties they will be available for consultation with the regional staffs and, as in the past, with local authorities. The regional staffs have also been selected to make possible some specialization among their personnel. Some time must elapse before the scheme can be brought into full operation, but the urgency is such that it has been brought into force on a provisional basis.

A Zoological Index

The Zoological Society of London announces the approaching completion of the Nomenclator Zoologicus under the editorship of Dr. Sheffield Neave. This great work will be an index of the generic names of all animals. The foundation of modern nomenclature is the tenth edition of the Systema Naturae of Linnaeus, published in 1758. The Nomenclator Zoologicus is an attempt to bring into a single alphabetical arrangement all the names of genera and subgenera published during and since the time of Linnaeus down to 1935. The information contained in the new Nomenclator could be found previously only by searching a large number of publications of which the far more expensive and most ambitious is the Nomenclator Animalium Generum et Subgenerum in course of issue by the Prussian Academy of Science since 1926 and still incomplete, with references only up to 1921. The enormous number of animals which have been and are still being described by science is not generally realized. The new Nomenclature will contain 225,000 generic and subgeneric names, some 5,000 of which are not to be found in any similar work. It is said that some 10,000 new species and 2,000 new genera of insects are described each year. Of the total in the Nomenclator more than half the genera are insects, the mollusks account for 30,000, the arachnids, crustaceans and birds for 10,000 each and the worms for 8,000. The price of the Nomenclator is $31 to subscribers and $42 after publication. It has been made as low as possible and bears little relation to the cost of production.

Chemotherapy Combined with Immunotherapy

Little work has been done on the relative merits of chemotherapy and immunotherapy or on the value of combining them. At the Royal Society of Medicine Prof. Alexander Fleming of the inoculation department of St. Mary's Hospital made a communication on the synergic action of vaccine and serum therapy and on treatment with sulfanilamide and sulfapyridine. He said that it had been shown that the new chemotherapeutic agents had a bacteriostatic rather than a bactericidal action. Their chief result was interference with the growth of organisms, the destruction of which was completed by the natural defensive mechanism of the body. Even in the case of the organism most sensitive—the hemolytic streptococcus—the drug alone did not suffice to destroy it. Immunity could be increased passively by serum therapy or actively by vaccines. The results of combined serum and sulfapyridine were not yet available, but he had carried out experiments in vitro which showed the value of the combination. Antipneumococcic serum was found greatly to increase the antibacterial effect of a blood-sulfapyridine mixture on pneumococci. Several workers had shown that antiserums in conjunction with sulfanilamide had a striking action. The administration of vaccines with the new chemotherapeutic agents had given results far superior to either alone. Fleming described experiments on the mouse and rabbit in which these animals were injected with pneumococcus vaccine and six days later with pneumococci. Vaccine therapy alone, like chemotherapy alone, pro-

duced a diminution in the number of colonies, but only the two combined produced total destruction. There was clinical evidence pointing in this direction, though it was not conclusive. His conclusion was that the new drugs acted on certain sensitive bacteria, retarding or preventing their reproduction, and that then the natural defensive mechanism completed the destruction. The result depended on the sensitiveness of the infecting organisms to the drug and also on the immunity of the patient. This immunity could be increased by serums or vaccines, but the former were available only for certain infections while the latter could now be obtained for almost all bacterial infections.

PARIS

(From Our Regular Correspondent)

April 1, 1939.

Annual Meeting of American Hospital Board

After passing resolutions thanking Mr. E. B. Close for his services, without remuneration, as managing governor of the hospital, attention was called at the annual meeting of the board of governors to the fact that for the first time in the history of the American Hospital of Paris the budget for 1938 had been balanced. The medical, nursing and administration staffs were thanked by the board of governors for their untiring devotion. Services representing an income of more than two million francs (about $55,000) were rendered to part pay and free patients during 1938. In addition to the American resident physician, whose length of service varies from one to three years, the hospital also receives three graduates of American medical schools for one year's service. The nurses' training school was discontinued because of lack of funds a few years ago, but there are seventy graduate nurses from various American and European hospitals.

During the past year, donations amounting to more than 450,000 francs ($13,000) were received. The total number of inpatient days was 32,719, of which 11,260 were ward patient days. On an average forty-one patients were treated daily in the outpatient department.

Radiophotography in the Diagnosis of Tuberculosis

Examination of large groups of persons for pulmonary tuberculosis entails an almost prohibitive expenditure if films are used in every case; hence in France at least it has been necessary to limit examination of the lungs to radioscopy. At the January 31 meeting of the Académie de médecine of Paris a method termed radiophotography as employed at Rio de Janeiro, Brazil, by Dr. Manuel de Abreu was described by Dr. Georges Ronneaux of Paris. Radiophotography, or indirect radiography, consists in simultaneously photographing the thoracopulmonary images as they are observed at radioscopic examination. The camera is similar to the cameras sold everywhere for making cinematographic films. The photographs of the radioscopic images are too small to be studied directly, but they can be examined with the aid of a magnifying glass or can be enlarged for lantern slides or films of adequate dimensions, to be inspected as would be ordinary 14 by 17 inch films of the chest. When these enlargements are compared with the minute images obtained by the cinematograph, it is found that every detail observed during the radioscopic examination is preserved. The advantages of this newer method of radiophotography are that the films can be studied at a time when the radiographer is not engaged in the examination of many persons and that the expense is minimal as compared with that of making a film of every chest. When positive evidence is noted at radioscopic examination, the latter is followed by the older method of exposing the larger films.

Radiophotography is primarily a method to be recommended for the examination of large groups of school children, soldiers, sailors and hospital and industrial personnel and for use in dispensaries for the detection of pulmonary tuberculosis early in its evolution. A number of films were shown by Dr. Ronneaux of patients at the Hôpital Cochin of Paris. He has perfected an apparatus, termed an oscillostrator, so that the recently introduced method of tomography, or the study of lesions of the chest in sections (pulmonary stratigraphy), can be combined with Dr. Manuel de Abreu's method of radiophotography. With the aid of the oscillostrator, instead of being obliged to use seventy-two large films for nine patients, at an expense of 1,800 francs, he found it necessary to expose only eighteen large films, of areas which required special study, at an expense of only 395 francs.

Treatment of Obliterating Arteritis

At the February 28 meeting of the Académie de médecine a paper was read by Dr. Jean Walser and his co-workers in which the results of the treatment with alternate compression and decompression of twelve patients with obliterating arteritis were reported. This method has been extensively used in the United States. A marked improvement was noted in nine patients. The apparatus employed was that of Drs. Rosenstiel and Garsaux, described in the July 7, 1937, *Presse médicale*. No difference in the results was noted so far as sex was concerned. The improvement was especially of a functional character, but little relief of the pain being noted in spite of a progressive diminution of the index. A marked improvement in the trophic changes, especially in the cyanosis, was noted. The authors believe that this method of alternate compression and decompression is an important addition to the treatment of obliterative arteritis.

Incidence of Retroplacental Hemorrhage

According to an article by Drs. Trillat and Magnin in the December 1938 *Revue française de gynécologie*, sixty-six retroplacental hemorrhages were observed in 20,000 deliveries. In fourteen of the sixty-six cases there was an anomalous insertion of the placenta, but clinically these fourteen cases did not differ in any respect from those in which the placental insertion was normal. There are three clinical forms of retroplacental hemorrhage: 1. A mild form of which twenty cases have been observed; the fetus does not die in this form and the extent of separation does not exceed more than half the surface of the placenta. 2. A moderately severe form, with death of the fetus but survival of the mother; there were forty-two cases of this form. 3. The severe form, which is rare, only four cases being observed, with a maternal mortality rate of 25 per cent. Albuminuria was not found in any of the sixty-six cases. The prognosis is far less favorable in multiparas and in general beyond the age of 30 years. The earlier the symptoms appear, the less favorable the prognosis. The total fetal mortality was 66 per cent and it does not appear possible at the present time to lower this high mortality rate. Medical treatment is indicated for the mother. Following artificial rupture of the bag of waters, further obstetric intervention should be undertaken with caution, because of danger of rupture of the uterus. Surgical treatment was never employed by the authors, who believe that it is rarely indicated.

Danger of Epidemics from Spanish Refugees

The French army and public health service deserve credit for the manner in which 400,000 Spanish military and civilian refugees have been vaccinated and cared for in various portions of France. In an article by Dr. Sautet of Marseilles which appears in the February 25 issue of *Presse médicale*, attention is called to the danger that two diseases which are prevalent in Spain and northern Africa, viz.: Spanish recurrent fever and malaria, may be brought into France by the refugees. The incidence of these two forms of infection is small in European France. Spanish recurrent fever is due to Treponema hispanicum and is transmitted to human beings by bites of the ordinary tick and the tick found on dogs. Malarial infection is

especially to be feared in the spring; hence it will be necessary for the French public health service to isolate persons who have had malaria as soon as any signs of recurrence appear.

Twenty-Fifth Anniversary of Biochemical Society

The French Biochemical Society was founded in 1914. To celebrate its twenty-fifth anniversary, a meeting will be held at the Maison de chimie May 26. Two foreign biochemists will read papers at the afternoon session. Professor Thunberg of Sweden will discuss the active role of hydrogen and of water in the phenomena of biologic oxidation, and Professor Polonovski will speak on twenty-five years of biochemistry. Foreign biochemists desiring to attend are asked to write to Mr. René Fabre, 149 rue de Sèvres, Paris.

BERLIN

(From Our Regular Correspondent)

March 20, 1939.

Protection of Hospitals Against Aerial Attack

The national minister of aviation and commander-in-chief of air forces, Goering, has issued certain rules relative to the structural protection offered by civil and military hospitals and similar institutions against aerial attack. According to the air minister the proper protection of institutions that serve public health can be a vital factor in the capability of a population to resist aerial attack. It is emphasized that, in the choice of the site for a new hospital, possible danger of aerial attack should be considered as well as the hygienic requirements. Larger institutions that serve health should not be erected on sites manifestly vulnerable to aerial attack. Among extremely dangerous locations, the inner zones of cities and thickly built up areas may be reckoned. The total bed capacity of a civilian hospital or similar institution (with the exception of a university clinic) should not exceed 600 beds; military hospitals should not have more than 450 beds. Several smaller establishments at different locations are thus preferable to one large establishment. Adequate structural separation of various parts of an institution offers the best and most effective aerial protection. The pavilion system, however, is not recommended.

Air raid shelters must be constructed for the institution's personnel and patient population; there must also be especially protected emergency operating rooms. Shelters for bedfast patients and their nursing personnel should, if possible, be located in the basement. Separate shelters should be provided for patients with infectious disease. Special stipulations are made for air raid shelters in institutions for children, convalescents and old people. The architectural plans of new buildings are to include ample facilities for protection.

All civil and military hospitals should be inspected to determine whether any are so exposed that in the event of aerial attack the population would have to be evacuated. Hospitals dangerously situated should maintain their present size even if under normal conditions expansion would be demanded; in the course of time they should be torn down. If in any of the extant hospital buildings it is found impossible to provide suitable shelters from aerial attack, either in the basement or on the ground floor, new outbuildings to serve as shelters should be constructed. In such hospitals certain space may be designated within the main building which could be used if an aerial emergency should occur before the regular shelters have been completed..

Debut of Physicians in Domain of Art

"The Doctor as Painter and Sculptor" is the title of an exhibition in Berlin from February 12 to March 12 under the auspices of the Empress Frederick House for Graduate Medical Affairs. Here, for the first time in Germany, physicians have made a public debut in the domain of art. Heretofore many doctors have been known to be endowed with musical and literary talents, a number of doctors have been known who were writers and poets, and there are doctors' orchestras in Berlin, Vienna and Hamburg which have a good reputation. But nothing much has been known with regard to the extent to which physicians are active in the arts of painting and sculpture. Surprisingly, the jury of the exhibition was called on to choose from among 600 works of various kinds, including a number of carvings and chiseled forms. Among the 140 pieces selected for the exhibition, every genre, medium and technic was represented from the woodcut to the etching, from the small aquarelle, through the pastel and tempera to large-scale painting in oil, as well as wood carving and bronze casting. As many sided as the artistic aspect of the exhibition is its personal side. All types of medical men are represented, from the student to the ordinarius, from the country practitioner to the metropolitan specialist. That neurologists possess a special predilection for the brush and palette becomes evident at a first perusal of the catalogue. Virtually all the entries can be considered above the level of average amateur performance and among them are to be found some really fine works of art.

ITALY

(From Our Regular Correspondent)

March 18, 1939.

Congress of Roentgenology

The thirteenth National Congress of the Società Italiana of Medical Roentgenology took place recently at Bari with Professor Pietro as president.

HYSTEROSALPINGOGRAPHY

Prof. Armando Rossi, speaker on the first topic, dealt with female sterility, ectopic pregnancy and abortion. He pointed out the clinical and social importance of hysterosalpingography, especially in relation to dermography. He discussed the various causes of female sterility (congenital malformations, insufficient development, tumors and tubal stenosis) and advised the systematic performance of hysterosalpingography on all women who are sterile during the first year of marriage. The main characteristic of ectopic pregnancy is a special function of the uterus with periodic successive phases of contraction and dilatation, predominance of the phases of dilatation and prolonged phases of contraction. According to him, abortion from the so-called unknown causes may be due to (1) abortigenic causes on which the physician is not informed in the given case, (2) anatomic conditions and functional behavior of the uterus or (3) congenital hypoplasia of the female genitalia. Hysterosalpingography has important indications in prevention and treatment of abortion from demographic, social, clinical and medicolegal angles.

RADIOBIOLOGY OF SKIN

Professor Valenti, speaker on the second topic, said that radium and roentgen irradiations on the skin cause direct lesions to cutaneous cells with consequent temporary arrest of the functions of reproduction of the cell or death from necrosis of the nucleus. In the presence of dead cells the reparation of the basal epithelium takes place either by entrance of normal cells in the involved zone or by compensation of connective cells. If the skin is the seat of repeated irradiations in small doses, such as in the case of roentgenologists, trophic cutaneous alterations take place. The reactions of the skin to radium and roentgen irradiations are different in persons who have been previously treated by the same irradiations than in those who have not. The special behavior of the skin in these cases is due to the allergic factor.

IRRADIATIONS ON MEDIASTINUM

Professor Castronuovo pointed out the importance of roentgenology for the diagnosis and treatment of diseases of the mediastinum as well as other diseases related to physical and

psychic constitution. Roentgen irradiations are indicated in the treatment of bronchial asthma, whooping cough and hypertension..

RHEGMOGRAPHY AND STATIGRAPHY

Professors Cignolini and Gilardoni made demonstrations of an apparatus for rhegmography. The technic is original and has a place which is intermediate between seriography and kymography. Professor Vallebona presented a statigraph. Professors Palmieri and Monari reported a procedure for obtaining photographs of fluorescent screen on small x-ray films. The next congress will take place at Pisa with Professor Duranti presiding.

POLAND

(From Our Regular Correspondent)

April 3, 1939.

The Treatment of Syphilis

The Warsaw dermatologist Dr. Robert Bernhardt reported recently on the effect of treatment in 592 cases of primary and secondary syphilis. He discussed the question whether antisyphilitic treatment could prevent the development of visceral or nervous syphilitic conditions. Every case was observed for not less than ten years unless visceral or nervous involvement had developed earlier. Some of the cases have been observed since 1900; in many the treatment was started before the discovery of Spirochaeta pallida, arsphenamine treatment and serologic tests. Of the 592 patients, 133 were treated exclusively with mercury compounds, forty with arsenicals and twenty-three with bismuth preparations. A combined treatment with arsphenamine and mercury compounds was used for 271, and in 125 cases arsphenamine and bismuth preparations were used.

With mercury compounds alone, the author says that an effective treatment should consist of from six to nine series of rubs with mercuric ointment. Every series lasts from six to eight weeks, the rubs being performed daily for six days a week and the daily dose being increased from 2.5 to 4 Gm. of mercuric ointment. The dose varies with the general condition of the patient; it is reduced if any complication develops in the gums, kidneys or colon or if a fall in body weight is observed. The treatment has to last from three to five years. While the ratio between the number of good and of ill effects obtained with mercuric treatment was 1 to 1.7, no late syphilitic complications were observed in six of seven adequately treated patients.

In the series of patients treated with arsphenamine or neoarsphenamine alone, the ratio between good and ill effects was but 1 to 9. The author says that arsenical preparations act rapidly and effectively as far as symptomatic treatment of present syphilitic manifestations is concerned. As to prevention of later visceral recurrences, however, no evidence of any favorable influence has as yet been shown.

The treatment with bismuth preparations was effective in preventing later syphilitic complications. Eight of nine patients treated exclusively with adequate doses of bismuth for a sufficient period showed no evidence of such complications. In the entire series of patients treated with bismuth preparations the ratio between good and ill effects was 1 to 0.35. An adequate bismuth treatment should last from two to four years and consist of from five to nine series of from eight to ten weekly injections, each containing 0.2 Gm. of metallic bismuth. The patients treated with bismuth seem to be less disposed to later development of neurosyphilis than those treated with other drugs.

Combined treatment with arsphenamine and mercury showed a ratio between good and ill results of 1 to 1.2. The incidence of good effects was higher if the treatment was adequate. This treatment should consist of simultaneous administration of arsphenamine and a mercury preparation. The doses of each drug should not differ from the effective doses administered when the two are given separately. The same is to be said concerning combined treatment with arsphenamine and a bismuth preparation. In this series of cases the ratio between good and ill effects was 1 to 0.78. The results of combined treatment with arsphenamine and mercury and with arsphenamine and bismuth do not differ distinctly.

In conclusion, the author says that arsphenamine has not fulfilled expectations in the prevention of late visceral or nervous manifestations of syphilis.

Relation of Hypoglycemia to Hypotonia

Dr. H. Fiszel published a paper on carbohydrate metabolism in hypotonic states. He focused attention on the striking resemblance of the clinical picture of constitutional hypotonia to hypoglycemic states, which could be observed in hyperinsulinism as well as in hypoglycemia provoked for therapeutic or experimental purposes. Thus constitutional hypotonia seems to be related to hypoglycemic conditions. To throw light on this problem the author studied the blood sugar content in primary and secondary hypotonia, particularly in the glycemic curve before and after oral administration of 50 Gm. of dextrose. The research was carried out with forty patients with primary, i. e. constitutional, hypotonia as well as with subjects with secondary hypotonia, i. e. hypotonia due to such factors as heart failure and infectious diseases. There was a great difference between the shapes of the curves obtained in the two conditions. In comparison with normal records, the curve in constitutional hypotonia has been characterized by an initial subnormal level of blood sugar, an early and relatively low peak and a rapid drop, with a final deep hypoglycemic depression. In secondary hypotonia too initial hypoglycemia was present, but the peak of the curve was much higher and delayed and no final subnormal depression was shown. In some instances, in which the clinical differentiation between primary and secondary hypotonia was difficult, the curve had a medium or fairly normal shape.

The author says that there is in constitutional hypotonia a tendency to an absolute increase in the tonus of the vagal system and of the endocrine glands synergistic with insulin, while in secondary hypotonia the increase in the tonus of the vagus-insulin is relative and due to a decrease in the tonus of the sympathetic adrenal system. Further research should show whether the glycemic curve might aid in differentiating between primary and secondary hypotonia.

A Rheumatism Institute

The health authorities have decided to establish a Polish rheumatism institute to insure research on rheumatism and postgraduate education of physicians in rheumatology. There has been as yet no such institution in Poland.

Marriages

FREDERICK RUSSELL HASELTON, Lieutenant Commander, U. S. Navy, to Mrs. Ebba Hovey Hall at Great Lakes, Ill., April 14.

DALLAS NORMAN THOMPSON to Mrs. Emmie de L. Hambaugh Robinson, both of Elberton, Ga., March 18.

ROLF ANDREAS QUISLING to Miss Marie J. Sweeney, both of Madison, Wis., in Dubuque, Iowa, March 16.

SAUL RICHARD KAPLAN, Brooklyn, to Miss Reva Syril Stein of Fayetteville, N. C., March 12.

MICHAEL A. SALEEBY, Dillon, S. C., to Miss Mary G. Saleeby of Florence, March 22.

MORTON SELWYN KAUFMAN to Miss Janice Loeb, both of Washington, D. C., March 30.

RICHARD O. FLETT to Miss Alfreda Sharpe, both of Detroit, in Buffalo, March 21.

Deaths

William Edward Morgan, Chicago; Chicago Medical College, 1882; prosector in anatomy, 1881-1882, demonstrator in anatomy in 1885, demonstrator in operative surgery in 1887, professor of surgical anatomy and operative surgery in 1892, professor of clinical surgery, 1902-1920, and in 1924 was appointed medical counselor at his alma mater; professor of general and clinical surgery, Loyola University School of Medicine, 1920-1929, and since 1929 professor emeritus; past president of the Chicago Surgical Society; formerly on the staffs of the Mercy Hospital, Englewood Hospital, German Deaconess Hospital, Provident Hospital, Washington Park Hospital and the Jackson Park Hospital; aged 80; died, April 25, of chronic myocarditis and arteriosclerosis.

Arthur Vallée, Quebec, Que., Canada; Laval University Faculty of Medicine, Quebec, 1905; secretary and professor of pathological anatomy at his alma mater; from 1908 to 1912 director of the Municipal Laboratory, after serving as laboratory head at Hotel Dieu Hospital; in 1916 president of the eighth Congress of French-Speaking Physicians of America; was created a Chevalier of the Legion of Honor by the French Government during the jubilee of King George V and again at the coronation of King George VI.; member of the Royal Society of Canada, French Association for Study of Cancer, Royal College of Physicians and Surgeons of Canada and other medical societies; aged 56; died, January 8.

Leo Steiner, Chicago; Jenner Medical College, Chicago, 1906; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1907; member of the Illinois State Medical Society; instructor in medicine, 1911-1913, instructor in materia medica, 1913-1914, associate professor of materia medica and therapeutics, 1914-1915, and professor of materia medica and therapeutics, 1915-1916, Bennett Medical College; formerly superintendent of the Illinois Eye and Ear Infirmary; aged 55; died, January 7, of carcinoma of the colon with metastases to the liver.

Arthur Melville Shrady ✠ New York; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1893; instructor in physical diagnosis, Jan. 1, 1902, to June 30, 1907, chief of clinic and instructor in hydrotherapy, July 1, 1907, to June 30, 1908, and instructor in hydrotherapy, July 1, 1908, to June 30, 1913, at his alma mater; served in various capacities on the staffs of the Seton Hospital, Harlem Hospital, Herman Knapp Memorial Eye Hospital and the Harlem Eye, Ear and Throat Hospital; aged 69; died, January 14, of heart disease.

Alexander John MacKenzie, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1900; fellow of the American College of Physicians; formerly senior demonstrator in medicine at his alma mater; president of the Ontario Medical Association and past president and councilor of the Toronto Academy of Medicine; served during the World War; for many years physician to the Upper Canada College; on the staff of St. Michael's Hospital; aged 63; died, March 3.

Lewis Cass Tisdale ✠ Milwaukee; Wisconsin College of Physicians and Surgeons, Milwaukee, 1901; formerly associate clinical professor of surgery at Marquette University School of Medicine; for many years chief of staff at Misericordia, Deaconess, Mount Sinai and the old Trinity Hospital and a member of the consulting staff of the old Johnston Emergency Hospital; aged 60; died, January 12, of hypertensive cardiovascular disease and cerebral hemorrhage.

John David Thomas, West Rupert, Vt.; University of Vermont College of Medicine, Burlington, 1916; member of the Vermont State Medical Society; served during the World War; on the staffs of the Putnam Memorial Hospital, Bennington, Mary McClellan Hospital, Cambridge, N. Y., Emma Laing Stevens Hospital, Granville, N. Y.; aged 48; died, January 31, of coronary occlusion and arteriosclerosis.

Vard Houghton Hulen, San Francisco; College of Physicians and Surgeons of Chicago, 1887; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1888; in 1911 member of the House of Delegates of the American Medical Association; fellow of the American College of Surgeons; aged 73; died, January 14, of chronic myocarditis and cerebral thrombosis.

William Vaughn Stanfield, Attica, Ind.; Medical College of Indiana, Indianapolis, 1904; bank president; formerly county health officer; served during the World War; at one time member of the city council, county board of health and chairman of the board of health of Attica; aged 62; died, January 7, in the Methodist Hospital, Indianapolis, of coronary thrombosis.

Cassius M. C. Willcox, Kirksville, Mo.; College of Physicians and Surgeons, Keokuk, Iowa, 1891; member of the Missouri State Medical Association; served during the World War; formerly county coroner, health officer and county physician, and member of the state legislature; aged 68; died, January 24, of carcinoma of the throat.

Frederick Charles Steinmetz, New York; Columbia University College of Physicians and Surgeons, New York, 1912; member of the American Urological Association; a member of the staff of the department of urology, James Buchanan Brady Foundation of the New York Hospital; aged 52; died, January 22, of heart disease.

John Fulton Roe, Los Angeles; Rush Medical College, Chicago, 1899; fellow of the American College of Surgeons; formerly surgeon to St. Joseph's Hospital, Denver, and chief surgeon to the Denver and Rio Grande Western Railroad System; aged 66; died, January 29, of hypertension and arteriosclerosis.

J. A. E. Beaudoin, Montreal, Que., Canada; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University at Montreal, 1892; formerly governor of the College of Physicians and Surgeons of the Province of Quebec and of Notre Dame Hospital; aged 73; died, January 7.

Frederick Josias Wurtele, North Platte, Neb.; University and Bellevue Hospital Medical College, New York, 1906; member of the Nebraska State Medical Association; served during the World War; aged 61; died, January 17, in the Lincoln (Neb.) General Hospital, of cerebral hemorrhage.

Wilmot Edwin Patterson ✠ Westbrook, Minn.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1906; past president of the Southwestern Minnesota Medical Society; aged 56; died, January 15, in Slayton, of hemolytic streptococcic throat infection and septicemia.

Charles Joshua Tucker ✠ Rochester, N. Y.; University of the City of New York Medical Department, 1883; veteran of the Spanish-American War; on the staff of St. Mary's Hospital; aged 79; died, January 25, of hypertensive heart disease and cerebral hemorrhage.

Robert Lee Tye ✠ McDonough, Ga.; Bellevue Hospital Medical College, New York, 1885; past president of the Henry County Medical Society; aged 73; was drowned, January 8, when his automobile went over a bridge and pinned him down in 3 feet of water.

Lewis Edward Turrentine, Tahoka, Texas; Southwestern University Medical College, Dallas, 1909; member of the State Medical Association of Texas; county health officer; aged 53; died, January 29, in a hospital at Lubbock of acute myocarditis and pneumonia.

Edgar Eginton Stewart Jr., New York; Columbia University College of Physicians and Surgeons, New York, 1936; aged 29; died, January 16, in the Charles Es'Dorn Hospital, Walterboro, S. C., of injuries received in an automobile accident.

Robert Emmett Sylverstein ✠ Tylertown, Miss.; Tulane University of Louisiana School of Medicine, New Orleans, 1898; formerly mayor; on the staff of the Tylertown Hospital; aged 71; died, January 2, of heart disease and hypernephroma.

Given Addison Light, Salt Lake City; Georgetown University School of Medicine, Washington, D. C., 1906; member of the Utah State Medical Association; served during the World War; aged 61; died, January 11, of coronary disease.

William Mannen Young, Bloomington, Ill.; Eclectic Medical Institute, Cincinnati, 1897; member of the Illinois State Medical Society; on the staffs of St. Joseph's Hospital and Mennonite Hospital; aged 71; died, January 19, of heart disease.

David W. Reid, Jacksonville, Ill.; Chicago Homeopathic Medical College, 1889; member of the Illinois State Medical Society; on the staff of the Passavant Memorial Hospital; aged 83; died, January 15, of bilateral bronchopneumonia.

Charles Whelan, Washington, D. C.; Medical College of Alabama, Mobile, 1896; a member of the United States Board of Parole, Department of Justice; aged 65; died, January 28, in the Garfield Hospital of cerebral hemorrhage.

Allen Gano Wainright, Tulsa, Okla.; Washington University School of Medicine, St. Louis, 1902; member of the Oklahoma State Medical Association; served during the World War; aged 59; was shot and killed in January.

Louis Severin, Bluffton, Ind.; Miami Medical College, Cincinnati, 1899; past president of the Wells County Medical Society; formerly city and county health officer; aged 68; died, January 23, of a self-inflicted bullet wound.

Alexander Augustus Sizer, Schuyler, Va.; University College of Medicine, Richmond, 1899; member of the Medical Society of Virginia; served during the World War; aged 68; died, January 10, of cerebral hemorrhage.

John J. Carmody, Huntington, Mass.; St. Louis College of Physicians and Surgeons, 1924; served during the World War; aged 60; died, January 20, in the Mercy Hospital, Springfield, of influenza and coronary artery disease.

Le Roy Albert Woodward ✠ Worcester, Mass.; Tufts College Medical School, Boston, 1914; on the staff of the Harvard Private Hospital; aged 56; died, January 22, of lobar pneumonia and pneumococcic meningitis.

Philippe Richer, Montreal, Que., Canada; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, 1907; aged 55; was found dead in January of poison, self administered.

John Irwin Taylor, Elizabethtown, Ky.; University of Louisville School of Medicine, 1918; member of the Kentucky State Medical Association; aged 45; died, January 27, in the Baptist Hospital, Louisville, of uremia.

Abraham Benjamin Grossman, Cleveland; Western Reserve University School of Medicine, Cleveland, 1914; served during the World War; aged 49; died, January 10, in Miami Beach, Fla., of coronary thrombosis.

Harry Claucet Payne, Paris, Mo.; University of Missouri School of Medicine, Columbia, 1903; member of the Missouri State Medical Association; aged 59; died, January 12, of carcinoma of the colon with metastases.

Paul Jerome Todd, Canton, China; Kansas Medical College, Medical Department of Washburn College, Topeka, 1902; fellow of the American College of Surgeons; aged 65; died, January 16, of coronary thrombosis.

George W. Middleton, Salt Lake City; University of Louisville (Ky.) Medical Department, 1894; member of the Utah State Medical Association; formerly mayor of Cedar City; aged 72; died, Dec. 3, 1938.

Frank Edward Schram ✠ Chicago; Chicago College of Medicine and Surgery, 1915; served during the World War; aged 49; died, January 16, in St. Luke's Hospital following an operation for acute appendicitis.

James Bonney Sudduth, Clayton, Mo.; Barnes Medical College, St. Louis, 1904; member of the Missouri State Medical Association; formerly health commissioner; aged 82; died, January 28, of arteriosclerosis.

Clarence A. Wells ✠ Quincy, Ill.; Missouri Medical College, St. Louis, 1897; aged 68; on the staffs of the Blessing Hospital and St. Mary's Hospital, where he died, January 15, of injuries received in a fall.

Adolph Reinhardt Wittman, Merrill, Wis.; Rush Medical College, Chicago, 1888; formerly mayor, health commissioner and member of the board of education; aged 79; died, January 11, of cerebral hemorrhage.

Alfred Edward Oakes, Elizabeth, N. J.; University and Bellevue Hospital Medical College, New York, 1913; served during the World War; aged 52; died, Dec. 20, 1938, in the Alexian Brothers Hospital.

Hugh Morrow, Patton, Pa.; College of Physicians and Surgeons, Baltimore, 1908; aged 63; died, January 9, in the Miners' Hospital of Northern Cambria, Spangler, of chronic nephritis and myocarditis.

John Shaw Gibson, Gibson, N. C.; University of Maryland School of Medicine, Baltimore, 1905; member of the Medical Society of the State of North Carolina; aged 59; died, January 24, of coronary occlusion.

Darwin Schott, Champaign, Ill.; Homeopathic Medical College of Missouri, St. Louis, 1903; served during the World War; aged 58; died, January 30, in the Burnham City Hospital of cirrhosis of the liver.

Randolph Moore Gilliam, Chicago; University of Virginia Department of Medicine, Charlottesville, 1919; aged 43; died, January 14, in the University Hospital, Charlottesville, Va., of rheumatic heart disease.

Henry Augustus Kling, Flint, Mich.; Eclectic Medical Institute, Cincinnati, 1906; served during the World War; aged 65; died, January 24, in St. Joseph Mercy Hospital, Pontiac, of cerebral hemorrhage.

Abraham Mintz, Newark, N. J.; Rush Medical College, Chicago, 1931; member of the Medical Society of New Jersey; aged 34; died in January at the Presbyterian Hospital of chronic myelogenous leukemia.

Harry Webster Powers, Amherst, Ohio; Cleveland College of Physicians and Surgeons, Medical Department of the University of Wooster, 1886; aged 74; died, January 16, of cerebral hemorrhage.

Richard George Tietze Jr. ✠ Winter Haven, Fla.; Long Island College Hospital, Brooklyn, 1936; aged 28; died, January 5, in a hospital at Lakeland of injuries received in a motorcycle accident.

James Carroll Patterson ✠ Marengo, Iowa; John A. Creighton Medical College, Omaha, 1910; past president of the Iowa County Medical Society; aged 58; died, January 18, of lobar pneumonia.

Edward Elisha Pierce, Exeter, R. I.; Harvard University Medical School, Boston, 1890; member of the Rhode Island Medical Society; aged 82; died, January 28 in Providence, of coronary occlusion.

William Cabell Rives, Washington, D. C.; University of the City of New York Medical Department, 1877; member of the Medical Society of the District of Columbia; aged 88; died, Dec. 17, 1938.

Charles F. Marston, Providence, R. I.; College of Physicians and Surgeons, Baltimore, 1888; aged 74; died, January 5, in the Rhode Island Hospital of coronary thrombosis and prostatic hypertrophy.

Henry Justin Roddy Jr. ✠ Lancaster, Pa.; Jefferson Medical College of Philadelphia, 1925; served during the World War; aged 41; died, January 11, of illuminating gas poisoning, self administered.

Theodore Dodd ✠ Steubenville, Ohio; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1907; on the staff of the Gill Memorial Hospital; aged 71; died, Dec. 22, 1938.

Edwin Tracy Rhodes ✠ York, Pa.; University of Rochester School of Medicine, 1935; aged 28; died, January 26, in the Bryn Mawr (Pa.) Hospital of influenza, pneumonia and encephalitis.

Joseph Marshall Reed, Pittsburgh; Medico-Chirurgical College of Philadelphia, 1904; served during the World War; aged 61; died, January 30, in St. Petersburg, Fla., of cerebral hemorrhage.

George L. McLaughlin, Chicago; Rush Medical College, Chicago, 1900; member of the Illinois State Medical Society; aged 63; died, January 18, in Rochester, Minn., of carcinoma of the colon.

George B. McCutcheon, Detroit; Michigan College of Medicine, Detroit, 1883; Detroit Medical College, 1885; aged 81; died, January 13, of hypertrophy of the prostate and fracture of the hip.

Robert B. South, Rea, Pa.; Baltimore Medical College, 1896; aged 72; died, Nov. 21, 1938, in the Mercy Hospital, Pittsburgh, of hypertensive heart disease, nephritis and diabetes mellitus.

Lyle F. Hansbrough ✠ Front Royal, Va.; University of Virginia Department of Medicine, Charlottesville, 1901; aged 59; died, January 22, of acute nephritis and hypertensive heart disease.

Charles A. Paddock, Portland, Ind.; Physio-Medical College of Indiana, Indianapolis, 1901; formerly mayor, city and county health officer; aged 64; died, January 18, of heart disease.

Clark L. Phillips, Superior, Neb.; University of Nebraska College of Medicine, Omaha, 1912; aged 53; died, January 28, at the Hastings State Hospital, Ingleside, of coronary thrombosis.

Frederick Almon Steele, Half Moon Bay, Calif.; University of Vermont College of Medicine, Burlington, 1884; aged 74; died, January 18, of prostatic hypertrophy with obstruction.

Bernhard Kugelmann ✠ New York; Ludwig-Maximilians-Universität Medizinische Fakultät, München, Bavaria, Germany, 1923; aged 38; died, Dec. 24, 1938, in the Wickersham Hospital.

Robert Nathaniel Cox, Verdi, Va.; Bennett Medical College, Chicago, 1914; aged 60; died, January 28, in the Holston Valley Community Hospital, Kingsport, Tenn., of pneumonia.

Fred L. Murdock, Manhattan, Kan.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1906; also a dentist; aged 72; died, January 12, of diabetes mellitus.

Clark Edwin Sargent, Detroit; Rush Medical College, Chicago, 1895; aged 71; died, January 25, in the Providence Hospital of uremia, diabetes mellitus and chronic nephritis.

Ubert Conrad Vincent, New York; University of Pennsylvania School of Medicine, Philadelphia, 1918; formerly on the staff of the Harlem Hospital; aged 46; died, Dec. 18, 1938.

John Jay Waite, Deerfield, Ohio; Cleveland Homeopathic Medical College, 1900; member of the Ohio State Medical Association; aged 78; died, January 26, of heart disease.

Dorothea Willson Dekau Palamountain, Oakland, Calif.; Cooper Medical College, San Francisco, 1905; formerly physician for the city public schools; aged 57; died, January 3.

Owen G. Blackwell, Pine Bluff, Ark.; Tulane University of Louisiana School of Medicine, New Orleans, 1901; member of the Arkansas Medical Society; aged 65; died, January 6.

Charles Willis Duffin, Guttenberg, Iowa; Rush Medical College, Chicago, 1881; member of the Iowa State Medical Society; aged 79; died, January 19, of coronary sclerosis.

Donald Walter McKay, Nelson, B. C., Canada; University of Toronto Faculty of Medicine, 1918; L.R.C.P., London, M.R.C.S., England, 1922; aged 44; died, Dec. 28, 1938.

Earnest L. Meredith, Omaha; Barnes Medical College, St. Louis, 1909; aged 54; died, January 27, in the Immanuel Hospital of Hodgkin's disease and bronchopneumonia.

John Mair Robertson, Vancouver, B. C., Canada; L.R.C.S., Edinburgh, Scotland, 1882; University of Glasgow Medical Faculty, 1883; aged 80; died, Dec. 28, 1938.

James N. Kirk, Eagle Lake, Maine; Jefferson Medical College of Philadelphia, 1889; aged 71; died, January 16, in Roanoke, Va., of perinephric abscess and stone.

Charles Campbell Stanton, Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1902; aged 60; died, January 11, of a self-inflicted bullet wound.

John Forster Orr, Chicago; Victoria University Medical Department, Coburg, Ont., Canada, 1886; aged 80; died, January 8 of myocarditis and arteriosclerosis.

Martin Lawson Smail ✠ New London, Conn.; University of Vermont College of Medicine, Burlington, 1893; aged 71; died, January 21, of chronic myocarditis.

Matthew Reed McBurney, Los Angeles; Hahnemann Medical College and Hospital of Philadelphia, 1899; aged 68; died, January 15, of chronic myocarditis.

John Tazewell Nolen ✠ Poca, W. Va.; University College of Medicine, Richmond, 1910; aged 54; died, January 13, in a hospital at Charleston of myocarditis.

Edward Olinger Wilson, Madison, Neb.; John A. Creighton Medical College, Omaha, 1909; aged 59; died, January 9, in Bluebell, S. D., of heart disease.

Allard S. Lewis, Green Sea, S. C.; Baltimore University School of Medicine, 1897; aged 68; died, January 17, of coronary thrombosis and hypertension.

Peter Wesley Byers, Arcanum, Ohio; Medical College of Ohio, Cincinnati, 1900; formerly member of the board of education; aged 74; died, Dec. 25, 1938.

Benners Simpson Smith, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1912; aged 52; died, January 3, of chronic nephritis.

Joseph Scholfield Brooks, San Francisco; Hahnemann Hospital College of San Francisco, 1894; aged 66; died, January 22, of intestinal obstruction.

Frederick F. Zelle ✠ St. Louis; Washington University School of Medicine, St. Louis, 1906; aged 59; died, January 19, in the De Paul Hospital.

Durand W. Youngblood, Greenville, S. C.; College of Physicians and Surgeons, Baltimore, 1886; aged 81; died, January 9, of coronary occlusion.

John F. Courtney, Joliet, Ill.; Chicago Homeopathic Medical College, 1894; member of the Illinois State Medical Society; aged 77; died, Dec. 27, 1938.

William Henry Vose, Long Beach, Calif.; Colorado School of Medicine, Boulder, 1897; served during the World War; aged 69; died, January 14.

John Mathew Wells ✠ Bristow, Okla.; University of Nashville (Tenn.) Medical Department, 1909; aged 63; died, January 25, of pneumonia.

Thomas L. Nutter, Belle, W. Va.; Louisville (Ky.) Medical College, 1898; aged 66; died, January 16, in a hospital at Charleston of myocarditis.

Placido Venuto ✠ Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1934; aged 34; died, January 15, of bronchopneumonia.

William H. Mudge, Port Tampa City, Fla. (licensed in Florida in 1903); aged 77; died, January 21, of cerebral hemorrhage and hypertension.

Charles S. Stewart, Amite, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1884; aged 78; died in December 1938.

Perry Norton Whitney, Arkansas City, Kan.; Eclectic Medical Institute, Cincinnati, 1890; aged 82; died, Dec. 6, 1938, in the Mercy Hospital.

H. Orrahood, Big Isaac, W. Va. (licensed in West Virginia, by years of practice); aged 90; died, January 29, of cerebral hemorrhage.

George W. Patchen, Melbourne, Fla.; Chicago Homeopathic Medical College, 1893; aged 67; died, January 8, of coronary thrombosis.

Clinton C. Hall, North East, Pa.; College of Physicians and Surgeons, Baltimore, 1884; aged 79; died, January 9, of coronary thrombosis.

Armon C. Spooner, Spirit Lake, Idaho; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1905; aged 63; died, Dec. 31, 1938.

Samuel Perrin Rich, Tacoma, Wash.; Cincinnati College of Medicine and Surgery, 1902; aged 64; died January 11, of coronary sclerosis.

Robert John Kincaid, Mars Hill, Maine; Medical School of Maine, Portland, 1894; aged 75; died, January 1, of cerebral hemorrhage.

Eugene Y. Willis ✠ Culpeper, Va.; Medical College of Virginia, Richmond, 1903; aged 60; died, January 5, of cerebral hemorrhage.

Albert Edward Webb, Salem, Mass.; Tufts College Medical School, Boston, 1910; aged 64; died, January 11, in the Salem Hospital.

James Barna Witherington, Munford, Tenn.; Vanderbilt University School of Medicine, Nashville, 1878; aged 84; died, Dec. 22, 1938.

Jacob C. Fults, Waterloo, Ill.; St. Louis Medical College, 1885; aged 77; died, January 30, at Shelbyville, Ind., of a cerebral hemorrhage.

Taylor Russell Baldridge, Dayton, Ohio; Medical College of Ohio, Cincinnati, 1888; aged 77; died, January 22, of cerebral hemorrhage.

William O'Connor, Paterson, N. J.; Albany (N. Y.) Medical College, 1914; aged 65; died, January 30, of cerebral hemorrhage.

Raymond Reed Roberts, Lawrenceville, Ga.; Emory University School of Medicine, Atlanta, 1922; aged 42; died, January 5.

James William McAdow, De Kalb, Mo.; University Medical College of Kansas City, 1908; aged 55; died, January 8, of teratoma.

Arthur Henry Orcutt ✠ Oakland, Calif; University of Illinois College of Medicine, Chicago, 1918; aged 46; died, Dec. 12, 1938.

William Gibson Hulme, Danville, Ga.; Hospital Medical College, Atlanta, 1910; aged 49; died, January 7, of angina pectoris.

Hugo von Dessauer, Brooklyn; Long Island College Hospital, Brooklyn, 1896; also a pharmacist; aged 60; died, January 2.

John Rossiter Gleason, Cleveland Heights, Ohio; Homeopathic Hospital College, Cleveland, 1889; aged 77; died, January 30.

Fred S. Brown, Oklahoma City; Missouri Medical College, St. Louis, 1893; aged 65; died, January 16, of cerebral hemorrhage.

David Caw Wilson, Park Hill, Ont., Canada; Trinity Medical College, Toronto, Ont., Canada, 1899; died, Dec. 19, 1938.

John M. Fewkes, Rio Grande City, Texas; Hospital College of Medicine, Louisville, Ky., 1895; aged 70; died in January.

Henry H. Imhofe, Baltimore; Baltimore University School of Medicine, 1893; aged 70; died, January 2, of gastric ulcer.

Roscoe Granville Blanchard ✠ Dover, N. H.; Medical School of Maine, Portland, 1884; aged 85; died, January 12.

William James Stevenson, Aurora, Ont., Canada; Trinity Medical College, Toronto, 1887; aged 74; died, January 22.

Fred Eugene Ladd, Antrim, N. H.; College of Physicians and Surgeons, Boston, 1902; aged 67; died, Dec. 22, 1938.

Alice Lyon Fitch, Stratford, Conn. (licensed in Connecticut in 1901); aged 60; died, January 30, of arteriosclerosis.

William H. Martin, Carlisle, Ky.; University of Louisville Medical Department, 1889; aged 73; died, January 27.

Guy Frank Rogers, Los Angeles; Toledo (Ohio) Medical College, 1897; aged 65; died, Dec. 29, 1938.

Correspondence

SULFAPYRIDINE

To the Editor:—The February 11 issue of THE JOURNAL contains two original articles dealing with a clinical trial of sulfapyridine, an editorial comment, a report to the Council on Pharmacy and Chemistry, as well as a letter in the correspondence columns. Because my contributions to this subject are generously acknowledged and quoted, you will perhaps allow me space to correct one or two misquotations, as well as to comment on some of the conclusions.

I would refer you in the first place to Dr. Long's, in many ways admirable but nevertheless somewhat pragmatic, pronouncement to the Council on Pharmacy and Chemistry (p. 538). I am there said to have "stated without giving experimental detail that sulfapyridine was also an active chemotherapeutic agent in the treatment of staphylococcic infections." The reference given is to my Bradshaw lecture to the Royal College of Physicians, which in its published form contains two protocols concerning staphylococcic infections, the one detailed and the other composite. Dr. Long also quotes me as stating "that in experimental infections the drug acts by bringing about degenerative changes in the capsular material of the pneumococcus." In the publications to which reference is made, I have gone no further than to record that capsular changes are found during the course of a treated experimental infection. I have most carefully refrained from judging the significance of this capsular change until I had made a considerable study. My conclusions have lately been published (McIntosh, James, and Whitby, L. E. H.: *Lancet* **1**:431 [Feb. 25] 1939). I am surprised that Dr. Long has been unable to confirm my observation "that mice infected with pneumococci and treated with sulfapyridine are immune on recovery to infection with the homologous organisms." This phenomenon, first observed by Buttle (*Proc. Roy. Soc. Med.* **31**:154 [Dec.] 1937) with sulfanilamide and pneumococci, has in my own hands been demonstrated so frequently and with such constancy that it has formed the basis for observations concerning the mode of action of sulfanilamide derivatives.

It is unfortunate that Dr. Long's deductions should precede the publication of his experimental protocols; without these one can neither make extensive comment nor criticize the technic on which his conclusions are based. But, as fair comment, one may say that if, with the technic employed, this immunity phenomenon to pneumococci has not been observed, then the remaining experimental work, with its tepid conclusions as to the activity of sulfapyridine, may perhaps also be explained by differences in technic.

I submit that my own experimental results, which show that sulfapyridine is vastly superior to sulfanilamide in the treatment of experimental pneumococcic infections, which results have been completely confirmed by Fleming's in vitro work (*Lancet* **2**:74 [July 9], 564 [Sept. 3] 1938), and that the word "vastly" is a much more accurate description than that given by Dr. Long, who admits merely that sulfapyridine is "somewhat superior." Were Dr. Long's estimate correct, then during the three years that sulfanilamide has been widely used there should surely have been more than a mere handful of successes (usually type III) claimed for sulfanilamide in pneumococcic infections. As it is, during the mere nine months in which sulfapyridine has been available in limited amounts there have been clearcut reports concerning its effectiveness in the clinical field, and these have been made by competent observers in England, Africa and America; the two articles in your issue of February 11 are admirable examples.

The letter of Drs. Bullowa, Plummer and Finland (p. 570) opens with a ponderous warning concerning the futility of "many agents, chemical, physical and biologic, that have been recommended for the treatment of pneumonia." So far as I am aware, few if any of the "recommendations" quoted in the list have been based on extensive experimental work giving consistent results; such remedies cannot, therefore, justifiably be bracketed with sulfapyridine. The same letter contains a special plea for the continued use of serum therapy. In relation to this point, a paragraph in the original article of Drs. Flippin, Lockwood, Pepper and Schwartz (p. 531) contains the following significant statements: "Several patients who had received large doses of serum without apparent effect were given sulfapyridine and recovered," and "We instituted treatment . . . regardless of complications or the apparent terminal condition." The successes claimed for serum would be greatly altered by this test, for it is well known that a critical result with serum can be expected only when the patient is treated in a satisfactory stage of the disease.

The United States of America can provide a large amount of material for assessment under controlled conditions. It is earnestly to be hoped that further trials with sulfapyridine will produce the consistent clinical results that have already been reported from America.

LIONEL E. H. WHITBY, M.D. (CAMB.), F.R.C.P. (LOND.)
Bland-Sutton Institute of Pathology,
Middlesex Hospital, London, W. 1.

To the Editor:—I am sorry that Dr. Whitby has taken exception to parts of the report which I made to the Council on Pharmacy and Chemistry concerning the experimental and clinical status of sulfapyridine (THE JOURNAL, February 11, p. 538). I have no desire to enter into a controversy with him over our respective views on the experimental effects of sulfapyridine, as such a course wastes time and effort and rarely serves a useful purpose. However, since Dr. Whitby feels that he has been misquoted, both as to the content of his work and as to the interpretations which he has derived from certain of his investigations, courtesy requires an answer.

A rereading of Dr. Whitby's Bradshaw lecture (*Lancet* **2**:1095 [Nov. 12] **1938**) still leads me to the belief that "experimental detail" is lacking in his report concerning the therapeutic efficiency of the drug in staphylococcic infections in mice. It is well known that mice are quite resistant to experimentally produced staphylococcic infections, and while protocols of the results of experiments are given in this paper there is no mention of the origin of the strain of staphylococcus or the route or method of inoculation employed. Without this information a repetition of his experiments would be impossible.

Dr. Whitby's second point has some justification in that, although he wrote "the organisms showed degenerative capsular changes," he did not state that "the drug acts by bringing about degenerative changes in the capsular material" but said: "It [the drug] appears to exert a definite action upon the pneumococcus capsule" (*Lancet* **1**:1210 [May 28] 1938). Apparently I interpreted his remarks too literally on this point.

As I mentioned before, I have not been able to confirm Dr. Whitby's observation regarding the development of immunity in mice infected with pneumococci and treated with sulfapyridine. In the limited space allowed me for my special article I did not go into any explanation for this but, as he surmises, it can be attributed to differences in technic—or rather in the strains of pneumococci employed in the two laboratories. The strains used in my laboratory are not only highly virulent but are also rapidly invasive. With our type I strain the inoculation of one or two organisms causes the death of a mouse within twenty-four hours. Dr. Whitby's strain seems almost as virulent, in that his inoculation of five organisms generally killed control mice, but the average survival time of such animals was 3.3 days. This longer survival time evidently permits Dr. Whitby to use much larger inoculums and still get survivals in mice treated with large doses of sulfapyridine. These surviving

mice, having received a larger dose of antigen (pneumococci) than ours, may well be immune to homologous reinfection. The smaller inoculums of pneumococci used to infect our mice do not produce immunity in the surviving animals.

In our experience with the highly virulent and rapidly invasive strains, it has been difficult to obtain an appreciable number of surviving mice even though treatment was begun immediately after the infection and was continued intensively over a period of seven days. Out of 115 mice infected with about a thousand type I pneumococci each and treated with sulfapyridine, only seven survived, and while the life of mice infected with types II and III pneumococci and treated with the drug was prolonged, none survived. Hence in our hands sulfapyridine has been "somewhat superior" to sulfanilamide in the treatment of pneumococcic infections in mice and not "vastly" superior.

PERRIN H. LONG, M.D.,
The Johns Hopkins Hospital,
Baltimore.

FUNGOUS INFECTIONS TREATED BY IONTOPHORESIS OF COPPER

To the Editor:—The article "Fungous Infections of the Hands and Feet Treated by Iontophoresis of Copper" by Haggard, Strauss and Greenberg, in the April 1 issue of THE JOURNAL interests me. May I comment regarding the evidence on which their report is based? The authors neglect to prove that the cases they cite are of fungous origin and, by inference, must consider an exact mycologic diagnosis of their cases to be unimportant. Assuming that an accurate clinical diagnosis of dermatophytosis was possible in every instance, the reader is still left in doubt as to the species of fungus responsible. A report on the treatment of pneumonia in which the signs of rapid breathing, fast pulse and fever were the only reported diagnostic signs would probably be considered somewhat archaic. It is known that there is a wide variation in the therapeutic response to medication of the superficial fungous diseases according to the species of infecting micro-organism. Many cases of acute eczematoid eruptions of the hands and feet (fungous and nonfungous) respond to conservative measures, such as intermittent baths of potassium permanganate (1:3,000), superficial roentgen therapy in fractional doses and the application of bland dusting powders. When treatment of such cases is given in this way the time for apparent cure will be found to compare favorably with the average time of more than five weeks required by the authors in their reported series. Acute dermatophytosis is often overtreated, and keratolytics or fungicides used in strong concentration may produce secondary eczematization. The authors admit that their study has not been adequately controlled. Is it not trite to inquire why they should desire to publish their observations when they are incomplete? Even a preliminary report in which they say they have demonstrated that iontophoretic administration of copper causes response in dermatophytosis of the hands and feet should contain laboratory proof of the existence of an infection, cultural determination of the species of pathogenic fungus, evidence that other treatment —such as wet soaks of potassium permanganate—would not do as well, and negative laboratory results when the patient is considered cured. The degree of positive reaction, or the presence of a negative reaction to trichophytin, would also be of value and interest. Had the selection of cases included infections due to Trichophyton purpureum (in which there is no likelihood of spontaneous cure), the evaluation of the specific fungicidal effect of iontophoresis of copper might have been more fairly determined. The method may be valuable, but a report such as this does not leave this reader unduly impressed with its specific fungicidal effect. Pathogenic fungi are rarely found on normal skin. This is borne out by the work of Downing, Nye and Cousins (whose article the authors quote but could hardly have read carefully) and of other investigators. There are numerous saprophytes on normal skin, but these have no place in a discussion on dermatophytosis.

GEORGE M. LEWIS, M.D., New York.

"TRICHINOSIS"

To the Editor:—The editorial on trichinosis (THE JOURNAL, March 18, page 1074) by supplementing other efforts to emphasize the prevalence of trichinous infestations, will do good, making the profession more keenly aware of the possibility of this diagnosis. Since it may be interpreted as exaggerating the situation, it may do harm by delaying the control of the condition by rational methods. The industries concerned in hog raising and the marketing of pork products are now being approached by means of conferences to adopt some voluntary program of control.

The editorial fails to discriminate between minor degrees of infestation, which are to be shown post mortem only by refined technics, and the clinical entity trichinosis. The demonstrated high incidence of trichinous invasion does argue a potential menace of large proportions, but the small number of reported cases of trichinosis furnishes an argument for those who wish to believe that most of these invasions are of little importance. The estimate in the article of "48,000,000 cases of trichinosis" may readily be interpreted by those so minded as a reductio ad absurdum of the argument for the existence of a serious menace. The validity of applying maximum figures to the entire country also may well be questioned.

As a minor point, which nevertheless does have a bearing on the significance of the maximum figures of Evans, the misstatement regarding technics may be cited. The press preparation method is in reality the "old method," in use for some fifty years, while the digestion-Baermann technic is relatively recent. Again, Evans's use of the combined technics is no innovation, since the determinations at the National Institute of Health were made by the combined methods. Evans's higher figures, unless indeed they are due to the examination of a greater number of skeletal muscles per case or to the error incident to a relatively small sample, would appear therefore to reflect merely a higher local incidence, from which the derivation of country-wide figures would not be justified.

Believing as I do that many clinical cases of trichinosis fail of recognition, I regard the editorial as a step in the right direction of increasing professional awareness.

L. R. THOMPSON, M.D., Washington, D. C.
Director, National Institute of Health.

"PHYSIOLOGY OF THE BRAIN STEM"

To the Editor:—In the issue of January 21, page 267, of THE JOURNAL I see that the review of my monograph "Beiträge zur Physiologie des Hirnstammes" (contribution to physiology of the brain stem) contains a serious error. This review ascribes to me the opinion that the dampened and interrupted direct current selectively stimulates the fibers and centers of the autonomic system. Actually, I have demonstrated, and have also so described it, that by the interrupted (pulsating) direct current with dampened potential fluctuations the stimulus thresholds of the animal and of the autonomic systems are brought nearer to each other. The incorrect statement in the review is misleading to the neurophysiologist and neurologist, and an entirely impossible point of view is ascribed to me.

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Director, Physiologisches Institut
der Universität Zürich.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

PHYSICAL FITNESS INDEX TESTS

To the Editor:—What is considered the validity of the physical fitness index tests? In a review of recent strength-testing literature, Frederick Rand Rogers, Ph.D., made the following statement: "That physical educators will be called on more and more to increase pupils' health is revealed by each new report of conditions in the medical field. The plain fact is that physicians, nurses, public health services and hospital organizations are not now keeping abreast of the nation's health problems. Even if they were, they still would only serve 2 to 3 per cent of the population, chiefly preventing these from losing their lives before reaching nature's appointed span. Who is to care for the 30 or 40 per cent whose health is regularly below normal, and steadily slipping down the scale, if not physical educators? And what is health? . . . This is abundantly muscular power and coordination, which are measured most objectively, reliably, economically and interestingly to subjects by the simplest forms of strength tests." Is this a view which physical educators generally will accept and put into practice? A notice in the *Bulletin* of the Indiana State Board of Health for October 1938 was as follows: "Frederick Rand Rogers, director of physical education at Boston University, has written us as follows: 'This is to report that a Boston manufacturing concern, the DuWard Company of 51 Cornhill, Boston, is now experimenting with new designs for physical fitness testing instruments far superior to those now on the market, which they claim they can sell at greatly reduced prices. For example, the new back and leg dynamometer at less than $100 (the present instrument is listed at $200 and sold at $160-$180). As you know, the chief stumbling block to the use of P. F. I. tests has been the exorbitant cost of dynamometers; therefore we are overjoyed at this new development. This note is a warning; if you know of any one about to order dynamometers, have them wait for the new instruments, or at least until we have a chance to examine and recommend or disapprove them.'" What do you think of this? Finally, I should like to ask what steps the family physician should take when the tests show a low status.

M.D., New York.

ANSWER.—[This question has been referred to workers in the field qualified to express opinions on the subject. The answer is based on their combined views.]

This question revolves around the validity of interpreting the degree of muscular strength as a definite reflection of physical fitness. Certainly even though a patient shows high muscular ability in a test it does not follow that his entire physical condition is definitely established. The human body is too complicated to attempt a diagnosis of physical condition by muscular strength alone; furthermore, it is quite generally conceded by students of the subject of physical fitness that performance tests are not as useful and as discriminating in the estimation of physical condition as the nonperformance tests. All strength tests are performance tests and hence require the conscientious cooperation of the examinee. In connection with the statement made by Rogers that "'the capacity of an individual for work is a useful measure of his health'" it may well be asked "What kind of work?" Most individuals today are not called on for great efforts of muscular power. Physical fitness after all is the ability to adjust to the environment and is related quite as much to the countless chemical and physical processes continually taking place as to the ability of muscles to do work.

The physical fitness index test, or the Rogers test, came into use during the early years of the present vogue for what is called "tests and measurements in physical education." In fact, so widely has this test spread in elementary and in secondary schools that it is being put to the following uses in Brookline, Mass.: (1) as the basis for the physical education activities program prescribed individually for every pupil, (2) as a guide to the evaluation of teaching procedures, (3) as a yardstick against which to consider academic load (the physical fitness index purports to determine not only a child's capacity for physical activity but "to a significant degree also his capacity for mental endurance"), (4) as a criterion by which the nutritional status and health habits may be judged, and (5) apparently as a check on the adequacy of the medical examination. The school physician is without laboratory facilities, including x-ray examinations, blood tests and determinations of the basal metabolism. The physician presumably therefore misses certain important conditions affecting physical fitness. The impression one gathers is that the physical fitness index is a tool of superior diagnostic value. Armed with this tool the physical educator, "cognizant of all defects," is now being a guide to the doctor, the school nurse, the classroom teacher and the parent (Hines, Thomas H.: A New Emphasis on Health, *J. Health & Physical Education* **10**:20 [Jan.] 1939). On a priori reasoning alone, the physical education profession must be considered bold indeed to presume serious diagnostic significance inherent in a test administered at the rate of "about a minute per pupil for corps of testers." No physiologist would be willing to say that physical fitness can be judged primarily on the basis of strength, when strength is measured by a battery of tests involving single, maximal efforts. Dynamometer tests are notoriously subject to profound variations from psychic causes alone. Strength probably fluctuates moderately as all biologic functions do. What its normal limits of variation are for the Rogers strength test has never been satisfactorily studied. No valid test of physical fitness can disregard the inclusion of a direct or indirect estimate of the response of the cardiovascular respiratory system to measured work. If instead of dynamometer tests the Rogers battery measured the "staying power" of the major big muscle groups, the load, speed, duration and rate of doing work being controlled, its score would have vastly more value. A battery of tests composed of single maximal pulls on a dynamometer certainly does not indicate a child's "capacity for sustained physical activity or endurance."

The following general criticism of the whole test and measurement program prevents taking its results seriously: 1. The instruments used are meticulously calibrated. 2. The technic of the administration of the tests is carefully taught and the reliability of each operator is particularly measured. 3. The subject, however, is handled as a robot, unaffected by meals, fatigue or psychic disturbances. There is no regard for the fundamental rule that in all human research one should begin with a subject in an essentially "basal" condition and then carefully control the environment in which the tests are administered. 4. The data are subjected to involved statistical analyses and the numbers derived uncritically accepted whether there is sense behind the variables being related or not. Statistical methodology has taken the place of reason. 5. There is yet to be seen any evaluation of physical education fitness tests in a physiologic sense or any discussion of the possible mechanism whereby defects (the wen with the cancer beneath it) may be logically thought to modify physical fitness.

It may be safely concluded that current scientific opinion cannot grant that physical fitness can be deduced from one set of measurements alone or that muscular strength is either an accurate or a valuable index of physical fitness. (If it were, why is it that women at practically all ages have a longer life expectancy than men?) The skeletal muscle might be in good shape while there was difficulty impending in the smooth muscle of the viscera. Of all measurements, those of muscle might be considered the poorest. Emotional states determine their energy output in a large measure, and this is a serious objection. Positive performance tests are notoriously hard to control. Devotion to one test and the advice that all others be discarded for experimental purposes when associated with advertisements for $100 dynamometers do not lend credence to the scientific nature of the studies reported.

SPHENOPALATINE NEURALGIA AND STELLATE GANGLION

To the Editors:—What information can you give me about the stellate ganglion especially in relation to sphenopalatine neuralgia?

A. L. LANGHORST, M.D., Elgin, Ill.

ANSWER.—Sphenopalatine neuralgia was first observed clinically by Sluder in 1920. He stated that the sphenopalatine ganglion could include some cells which were sensory or afferent in function. The ganglion itself, located deep in the sphenopalatine fossa, was known to receive both preganglionic and sympathetic fibers, the preganglionic or motor fibers being components of the facial nerve, while the sympathetic fibers were derived from the plexus of the internal carotid artery. It was felt by Sluder that infection from the sinuses might invade the sphenopalatine ganglion and give rise to neuralgia. Recent anatomic studies, however, do not support the opinion that the sphenopalatine ganglion contains afferent ganglion cells or pain fibers.

The stellate ganglion, however, is formed by a fusion of the first and sometimes the second thoracic ganglion with the inferior cervical ganglion of the sympathetic trunk. This is such a long distance away anatomically from the sphenopalatine ganglion that the connections between the two, if there are any, must cover a devious pathway. There is no evidence that they have any clinical connection, although the question presented may have arisen from the fact that alcohol injection or removal of the stellate ganglion has occasionally been performed in an attempt to relieve pain in the face. It rarely occurs that facial neuralgia of unusual type persists after cutting the posterior root of the fifth cervical nerve, thus presumably denervating the

entire side of the face. It is for this type of neuralgia that the stellate ganglion has been removed in the past, in the hope that through vasomotor or secretory changes the persistent neuralgia will be relieved. The operation has not, in general, proved successful, although a few cases have been reported in which relief was obtained. It seems unlikely that this operation has been performed for relief of Sluder's neuralgia, for the neuralgia Sluder originally described is now not accepted clinically. It should be pointed out, nevertheless, that there still are certain obscure types of facial neuralgia the cause of which is not known.

PSEUDOBULBAR PALSY

To the Editor:—A woman aged 62, following a prolonged upper respiratory infection last spring, developed a hypertensive encephalopathy during the summer. This cleared up and aside from general weakness she was as well as could be expected until two months ago, when she suddenly noticed some difficulty in speech, and examination revealed a palsy of the lower part of the left side of the face. There was also dysphagia. The speech difficulty improved quickly and also the facial palsy, but in about two weeks or so it was noticed that there was a weakness on the right side of the face, the dysphagia persisting. However, after about another six weeks there was definite improvement in the dysphagia, and the right side of the face was practically normal, when suddenly she again developed some difficulty in speech and there was again a weakness of the left side of the lower part of the face. The systolic tension varies between 180 and 220 and the diastolic between 100 and 110. Eyeground examination shows evidence of arteriosclerosis, and there are some old small hemorrhages. During the siege of the hypertensive encephalopathy she had marked pain in the lower part of the back and lower extremities and the latter were tender. About two months ago when the first attack of facial palsy was noted she complained of a good deal of pain and tenderness in the right gluteal region. I might also add that when the right facial palsy was noted she complained somewhat later (about two weeks) of weakness in the right hand and upper extremity. This has improved. She also cannot retain urine as well as previously. She wears an upper and lower denture. How would you explain this varying picture, and what would you do?

M.D., New York.

ANSWER.—The observations submitted suggest a syndrome of pseudobulbar palsy. This is usually due to bilateral small hemorrhages or thrombi in either hemisphere of the brain secondary to cerebral arteriosclerosis and hypertension. These lesions involve both the right and left pyramidal tracts in the brain, producing bulbar symptoms by loss of voluntary innervation and not by actual paralysis. Any good textbook in neurology should be consulted for a detailed description of the clinical symptoms. The prognosis is usually unfavorable. The condition may last for years and the symptoms may even disappear for a time. The treatment is entirely symptomatic, depending on the underlying condition (arteriosclerosis and hypertension). Because swallowing is difficult, care in feeding is generally necessary.

HYPERTENSION AND MENOPAUSE

To the Editor:—A woman aged 45, in the menopause, has a hypertension varying from 160 to 200 systolic. All other causes of hypertension have been eliminated; there are no foci of infection, nephritis or arteriosclerosis. In similar cases I have used theelin in oil with excellent results. I tried to use it in this case but her symptoms were aggravated: dizziness, nervousness and pressure. What type of treatment would be indicated?

M.D., Missouri.

ANSWER.—The information given is so meager that it is almost impossible to discuss the therapy adequately. Each instance of hypertensive arterial disease presents a new and different therapeutic problem. It is vitally important to know, for example, the level of the diastolic tension and whether or not it is fixed or variable. One is doubtful also as regards the proof that "there is no nephritis," for the mere absence of proteinuria is often erroneously taken as a criterion of normal kidneys. Thorough study of the renal function is necessary before one can say with certainty that renal functional impairment does not exist. The relative youth of the patient and the variability of the systolic tension suggest an endocrine factor in the etiology of this instance of hypertensive arterial disease but by no means prove it; additional data might well demonstrate an aortic regurgitation as a cause of the systolic hypertension.

Before advising the institution of any therapy, one must urge that additional diagnostic information be acquired. Sources of psychic turmoil must be carefully sought for and judiciously analyzed; anxiety, fear, discouragement and the like are significant factors and, if present, the prolonged use of mild sedation (such as with sodium bromide 0.6 Gm., or 10 grains, thrice daily) is indicated. Of first importance is a determination of the basal metabolic rate; thyroid disturbances are very common at the age of this patient and are often misleadingly masked. In such instances the major rise is in the systolic tension. As mentioned, renal function studies are also desirable and careful blood studies, for anemia is a not uncommon, although most frequently ignored, provoking etiologic factor in hypertension. Should the basal metabolic rate be elevated and/or anemia exist, the therapeutic indications become clear: the correction of these abnormalities. Should these tests yield evidence of normal conditions, endocrine therapy is worthy of trial. The gonadotropic extract from pregnancy urine, antophysin (Winthrop), follutein (Squibb), A. P. L. (Ayerst) or antuitrin-S (Parke, Davis) may be of value. Of greater importance, however, is the general dietary and hygienic management, which must include an adequately liberal fluid intake, a balanced diet and avoidance of excesses of condiments and spices. Proteins should not be radically restricted, for the problem is not to treat the disease but to treat the patient who has the disease, and prolonged restriction of protein intake depletes the body's resistance to infection and aggravates any tendency to anemia. Sufficient rest, calm reassurance and wise understanding and advice regarding the petty annoyances of existence can do much toward combating the psychic turbulence so characteristic of the "stormy menopause." Mild vascular sedatives of fairly prolonged action, such as sodium nitrite, erythroltetranitrate and bismuth subnitrate are worthy of trial. Sodium thiocyanate is too toxic to be used unless the patient is under exceptionally close control and frequent observations of the blood thiocyanate level are made.

THE "RADIONICS" HOAX

To the Editor:—Has there been any scientific research to determine the usefulness of Radionics in the diagnosis and treatment of disease?

M.D., California.

ANSWER.—"Radionics" is an outgrowth of the infamous Abrams quackery devices known as the "Oscilloclast," the "Electro-Concusser," the "Biodynamometer" and the "Sphygmobiometer." There is no evidence to indicate that any scientific investigation has ever been made of these devices. Indeed, there would seem to be no reason for making such a study. It is interesting to note that the editor of the *California State Journal of Medicine* and a member of the publication committee of the Medical Society of the State of California proposed a test of the Abrams device to Dr. Abrams. He refused flatfootedly in any way to cooperate in such an investigation (THE JOURNAL, June 10, 1922).

In some of the advertising for "Radionics," it is stated to be "the science of detecting and locating diseases by a mechanical action on magnetic waves produced by the radiation of ions through an instrument especially constructed for direct application to the human body" ["Alice in Wonderland" makes amusing reading too.—ED.]—"it being no more possible to find ulcers of the stomach if ulcers are not present than it is to get a Chicago station by turning a dial on your radio to a Detroit station." The latter is not so difficult as implied, if reference is to WJR in Detroit and WGN in Chicago.

Other advertising includes the statement that since "a famous American diagnostician has declared that over 50 per cent of diagnoses are wrong . . . 50 per cent of the 'doctoring' public are being 'doctored' for the wrong thing." Just in case this isn't fallacious enough to serve as an irrational basis for adopting this illegitimate offspring of an illegitimate offspring of medicine, it is added that "the chiropractor has been greatly aided in his analysis of a patient's condition by his ability to locate nerves, which because of interference have been unable to function normally; but even this additional advantage [provided it were true.—ED.] has left still much to be desired [more especially a modicum of medical science.—ED.] in obtaining positive and definite information free from the fear of contradiction."

Such problems, however, are "simple" in the eyes of the totally uninformed radionic enthusiasts, for, believe it or not, it is claimed that radionic examination will not only determine the presence of but will actually measure the intensity of "general poison, bacterial poison, inflammation, tissue degeneration, cancerous tendencies, pus and poison producing bacteria, tuberculosis, acidosis, diabetes, fibrous tissue [sic—ED.], cysts, ulcers, etc." and will indicate in which organs the conditions found are primary and in which secondary.

Continuing more of the buncombe found in the advertising for radionics: "Countless examinations have proved beyond a peradventure that the catarrhal and mucous discharges from the orifices of the body (nose, throat, ears, etc.) are frequently only secondary conditions, being the channels used by the body for the elimination of poisons arising elsewhere. For instance, a case of discharge of mucus and pus from the nose, having been under various forms of treatment for four years, was found to be due to an inflamed and infected condition of the liver ["the

newer pathology"—ED.] the source of poison in a much-treated case of 'rheumatism' was found to be in the large intestine, which, when properly cared for, resulted in a total disappearance of the rheumatic symptoms. In a case diagnosed as 'female trouble' and 'appendicitis' the gall bladder was found to be infected and inflamed. When the spinal cause of this ["chiropractic pathology"?—ED.] had been corrected the so-called appendicitis and other troubles vanished."

Finally, it is stated that "Radionics is not a substitute for Chiropractic, but a material aid to the Chiropractor inasmuch as it is in complete harmony with Chiropractic principles. Radionics operates totally in accord with science ["ignorance of" would be more accurate than "accord with."—ED.], and offers absolute scientific proof of the truth and sanity of the Chiropractic Philosophy [comparable to proving astrology by numerology.—ED.] that nerve interference is a primary cause of disease."

It is noted that all of these statements are made without any references to scientific texts or any reports in the medical or other literature, or to anything. There is no reason to institute any scientific research to determine the usefulness of radionics, when it does not even pretend to be based on anything even faintly resembling scientific evidence or, more accurately, on any evidence. It is so palpably over the borderline of science and scientific medicine and in the field of pseudomedicine and quackery that it does not deserve to be glorified by being given any consideration by scientific workers.

ANTIRABIC TREATMENT

To the Editor:—Dec. 17, 1937, a man and his wife called and gave the following history: They had been bitten on the forearms by their pet dog the previous day. The dog was observed by a veterinarian until December 18, when it died. The head was examined in the laboratory; Negri bodies were present. I gave both patients twenty-one injections of antirabies serum, two a day for the first week and one a day for the second. Neither has developed symptoms of rabies. Two weeks ago the woman was scratched on the forearm by her house cat. The cat later developed diarrhea and paralysis of the hind quarters and died on February 21. The head was examined in a laboratory within two hours after death. No Negri bodies were found. Both the husband and the couple's two sons had played with the cat during this time. No marks or scratches were found on the father's or sons' bodies. Should the four members of the family receive antirabies serum? If so, should the frequency of the dosage be the same as in the previous course of treatment? Should the children receive only prophylactic treatment? If so, how many injections should be given and how frequently? The pathologist at the laboratory has inoculated a rat with the serum from the brain of the cat. If the rat should develop no symptoms of rabies or the postmortem examination show no Negri bodies, should treatment be discontinued?

M.D., Illinois.

ANSWER.—There does not seem to be any compelling reason why the woman, the husband or the two sons should be given antirabic treatment.

POSSIBLE NEPHROSIS FROM PAINTS

To the Editor:—Have you any information on the effects of paint on the kidneys? A girl with definite nephrosis has been for a number of years a painter in a furniture factory, using both lacquers and turpentines and oil paints, always with a brush and never with a spray.

S. J. WOLFERMANN, M.D., Fort Smith, Ark.

ANSWER.—The kidneys may be involved as one aspect of many types of occupational diseases, including those which may follow exposure to turpentine, benzene, divers alcohols and other possible constituents of paint. However, the occurrence of nephrosis as the single manifestation of injury from some industrial intoxicant is unusual. In benzene poisoning nephritis may appear, but commonly this is overshadowed by other evidences of benzene injury such as anemia, leukopenia, hemorrhagic states or lowered resistance to infection. Any claim as to the occurrence of nephritis after exposure to benzene as the single and exclusive manifestation of benzene insult is open to question. The renal system may be involved in a general picture of damage through industrial agents, but rare indeed is this one system specifically damaged to the exclusion of others. Alice Hamilton, in "Industrial Poisons in the United States," quotes from the report of the British Commission on Industrial Paints as follows: "There is not sufficient ground to warrant us in accepting the view that turpentine poisoning is the cause of the leading symptoms commonly attributed to either acute or chronic lead poisoning, nor in attributing to the inhalation of fumes of turpentine and other thinners the occurrence of chronic Bright's disease." Dr. Hamilton herself does not fully accept this quoted statement and in turn says "Turpentine vapor appears able to set up acute nephritis and repeated attacks might be expected to terminate in chronic nephritis, unless those exposed establish some sort of immunity to vapor. Of such immunity there is no clear evidence." The stand here taken is that the occurrence of nephrosis in a worker exposed to various substances entering into paint and lacquers does not in itself constitute proof that the work materials are responsible.

BISMUTH HYDRATE COMPOUND NOT CAUSE OF DEATH

To the Editor:—Recently I was called to attend an infant of 6 months who died in less than twenty-four hours after having taken three doses of bismuth hydrate compound as per the accompanying formula. The dose was one teaspoonful every two hours, the symptoms beginning within about forty minutes after the last dose. In the absence of any other reasonable cause of death I would be glad to have your opinion on this case with information as to other similar cases if any have been reported. As you are aware, this dose was relatively large, being about six times the amount specified by the company that puts out this compound, but at the same time it is generally understood that none of the ingredients are considered highly toxic. Nevertheless the symptoms from the onset until death, which occurred about twenty hours after the family noticed evidence of a collapse, the onset of which was rather sudden, included cyanosis, depressed respiration and staring eyes with dilated pupils, although the baby did not seem to be completely unconscious at the beginning. At first there was no fever, the temperature being 96 F., but within a few hours the temperature began to rise and reached 102 about fourteen hours after the onset of symptoms. At the end of approximately fifteen hours the temperature began to decline as death approached. Also at the beginning there was considerable rattling in the chest, seemingly from mucus, but under the administration of respiratory and cardiac stimulants the noise in the chest disappeared but returned later as death became apparent. There was from time to time slight vomiting, something like once each two to three hours, not excessive at any time.

HENRY B. MAY, M.D., Benavides, Texas.

Bismuth Hydrate Compound

Formula: Each fluidounce represents:	
Chloroform	2 minims (0.12 cc.)
Bismuth oxycarbonate	10 grains (0.643 Gm.)
Fluid red gum (kino eucalypti)	32 minims (2.16 cc.)
Pepsin	4 grains (0.259 Gm.)
Phenyl Salicylate	1 grain (0.064 Gm.)
Alcohol	2 per cent
Oil and aromatics	q. s.

Action and Uses: Astringent and carminative, for use in the treatment of gastrointestinal irritation and fermentation and in diarrheas of various origins.

Supply: Bismuth Hydrate Compound—Bottles 4 ounces, 16 ounces, and 1 gallon.

Administration: From one to two teaspoonfuls every half hour for six or eight doses; children 10 drops to half a teaspoonful.

ANSWER.—The amounts of each of the ingredients of the prescription which the infant received in the three teaspoonfuls given are approximately as follows: chloroform 0.05 cc., bismuth subcarbonate 0.25 Gm., fluid of red gum (kino eucalypti) 0.81 cc., pepsin 0.09 Gm., phenyl salicylate 0.024 Gm., alcohol 0.22 cc. The nature of the oil and aromatics is not stated but it is presumed that they are nontoxic in the amounts used.

Although the dose given the 6 months old infant was about six times the recommended dose, the amounts of the various ingredients were small. The small amounts of the bismuth subcarbonate and the pepsin would certainly rule them out as the cause of death. The dose of kino eucalypti is from 5 to 20 grains (0.3 to 1.2 Gm.) of the solid gum. In this case only 0.81 cc. of the solution was used. The acutely fatal dose for chloroform when swallowed is not known with certainty, but 1 ounce would be dangerous (Sollmann). The infant received slightly less than 1 minim. Phenyl salicylate under ordinary conditions passes through the stomach unchanged, being hydrolyzed in the intestine into its components, phenol 40 per cent and salicylic acid 60 per cent. However, human milk may split it into its components (Usener) and hence in nursing infants it might give rise to a gastritis if given in large enough amounts. In this case only 0.024 Gm. was given, which would give approximately 0.009 Gm. of phenol and 0.014 Gm. of salicylic acid. These quantities are too small to give rise to dangerous symptoms, much less cause death. The 4 minims of alcohol is negligible as a cause of death. In addition these drugs were not given at one dose but were distributed over a four hour interval of time. As far as can be learned there have been no similar cases reported from this mixture.

The fact that the onset of symptoms began after the administration of the prescription might point to it as a factor in the production of symptoms, but in this case, having the possibility of violent specific allergic reaction to one or more of the ingredients, it may be presumed that the mixture was not the cause of death.

RADIUM POISONING FROM WATCH DIAL PAINTING

To the Editor:—I am interested in learning the incidence of radium poisoning in watch dial painting. A woman, aged 33, married, has necrosis of the mandible and superior maxillae. The Wassermann reaction and physical examination are negative. The patient worked at dial painting until twelve years ago, when she states that she was declared to be entirely negative so far as radium poisoning was concerned.

BERNARD R. BERKOWITZ, M.D., New York.

ANSWER.—Bony destruction of the mandible and upper maxillary in a woman previously employed in dial painting work using radioactive substances at once suggests an effect and cause relationship. The presence of radioactive substances in the body may be precisely determined even at this late time since the active period of the radioactive substances ordinarily employed far exceeds twelve years. Suitable x-ray, electroscopic or Geiger counter examination are required. The procedures involved are described in the *Journal of Industrial Hygiene* **20**:36 (Jan.) 1938 in an article entitled "Hazards in the Radium and Mesothorium Refining Plant at the University of Missouri." This article contains the following quoted statement:

> When radium or mesothorium is carried in the blood stream or deposited in the body it is possible to detect its presence by measuring the alpha ray activity of the expired air.
>
> The alpha ray measurements of radon in the expired air were made by having the worker blow through a drying tower and then through the ionization chamber of a calibrated electroscope until the air within the chamber had been replaced by the air from the lungs.

In New York, workers at the Columbia University College of Physicians and Surgeons are believed to be experienced in problems of this character and equipped with adequate apparatus for the performance of necessary testing. If the commoner causes of bony necrosis about the mouth can be ruled out, it becomes highly probable that precise proof can be adduced that the present condition is due to the action of radioactive substances connected with work twelve years or more ago.

A representative list of literature items bearing on this topic follows:

Leake, J. P.: Radium Poisoning, THE JOURNAL, March 26, 1932, p. 1077.

Schwartz, Louis; Knowles, F. L.; Britten, R. H., and Thompson, L. R.: Health Aspects of Radium Dial Painting: I. Scope and Findings, *J. Indust. Hyg.* **15**: 362 (Sept.) 1933.

Bloomfield, J. J., and Knowles, F. L.: Health Aspects of Radium Dial Painting: II. Occupational Environment, *J. Indust. Hyg.* **15**: 368 (Sept.) 1933.

Ives, J. E.; Knowles, F. L., and Britten, R. H.: Health Aspects of Radium Dial Painting: III. Measurements of Radioactivity in Workers, *J. Indust. Hyg.* **15**: 433 (Nov.) 1933.

Schwartz, Louis; Makepeace, F. C., and Dean, H. T.: Health Aspects of Radium Dial Painting: IV. Medical and Dental Phases, *J. Indust. Hyg.* **15**: 447 (Nov.) 1933.

Castle, W. B.; Drinker, K. R., and Drinker, C. K.: Necrosis of the Jaw in Workers Employed in Applying a Luminous Paint Containing Radium, *J. Indust. Hyg.* **7**: 371 (Aug.) 1925.

Evans, R. D.: Radium Poisoning: II. Quantitative Determination of Radium Content and Radium Elimination; Rate of Living Persons, *Am. J. Roentgenol.* **37**: 368 (March) 1937.

Hoffman, F. L.: Radium (Mesothorium) Necrosis, THE JOURNAL, Sept. 25, 1925, p. 961.

Jacobsen, I. C., and Ambrosen, Johan: Measurement of the Radiation to Which Roentgen and Radium Workers Are Exposed, *Acta radiol.* **17**: 252 (June) 1936.

McMahon, M. M.: Luminous Paint Poisoning, New York State Dept. of Labor, *Indust. Bull.* **16**: 291 (July) 1937.

Martland, H. S.: Occupational Poisoning in Manufacture of Luminous Watch Dials, THE JOURNAL, Feb. 9, 1929, p. 466; Feb. 16, 1929, p. 552.

Martland, H. S.: The Occurrence of Malignancy in Radioactive Persons: A General Review of Data Gathered in the Study of the Radium Dial Painters, *Am. J. Cancer* **15**: 2435 (Oct.) 1931.

Martland, H. S., and Humphries, R. E.: Osteogenic Sarcoma in Dial Painters Using Luminous Paint, *Arch. Path.* **7**: 406 (March) 1929; THE JOURNAL, May 11, 1929, p. 1631.

Rud, E.: Blood Examination of the Personnel of Roentgen and Radium Institutes, *München. med. Wchnschr.* **71**: 1552 (Oct. 31) 1924.

Radium Poisoning, *U. S. Month. Labor Review* **28**: 1200 (June) 1929.

POTASSIUM SALTS IN DIABETES MELLITUS

To the Editor:—I understand that some work has been done on the potassium alterations in diabetes mellitus. Can you enlighten me on this subject, mentioning references?

M.D., New York.

ANSWER.—Rathery and Bertoliatti (*Compt. rend. Soc. de biol.* **117**:875 [Dec. 1] 1934) reported that in patients with uncomplicated diabetes the potassium content of the plasma was usually normal. In some cases in which the condition was advanced the value was increased. A detailed study of the electrolyte balance in diabetic acidosis is given in the paper by Atchley and his co-workers (*J. Clin. Investigation* **12**:297 [March] 1933).

Peters and Van Slyke (Quantitative Clinical Chemistry, Baltimore, Williams & Wilkins Company, 1935, vol. I, Interpretations, pp. 787, 1054) mention that whereas the edema of malnourished individuals with severe diabetes is aggravated by the giving of sodium chloride or sodium bicarbonate it may be relieved by potassium salts. For a further discussion the reader is referred to this textbook.

Kerr (*J. Biol. Chem.* **78**:35 [June] 1928) found that whereas the potassium content of the blood serum of depancreatized dogs was essentially the same as that of normal animals, following a dose of insulin large enough to produce well marked hypoglycemia there was a definite fall in the potassium level. Kerr states that the potassium content of the erythrocytes is, however, not affected by overdosage with insulin and concludes that the potassium which disappears from the serum after insulin does not enter the corpuscles.

McQuarrie, Thompson and Anderson (*J. Nutrition* **11**:77 [Jan.] 1936) in studies on diabetic children found that potassium chloride when given in doses of from 10 to 20 Gm. daily together with a simple diet low in sodium caused a slight fall in the blood pressure and a significant increase in glycosuria. These effects were exactly opposite to those which resulted from the administration of sodium chloride in large amounts while the patient was maintained on a diet low in potassium. A high intake of sodium chloride depressed the level of serum potassium. The observations mentioned are consistent with those of Silvette and Britton (*Proc. Soc. Exper. Biol. & Med.* **37**:252 [Oct.] 1937), who reported that the administration of subtoxic doses of potassium to rats led to glycogenolysis and hyperglycemia.

IODINE AND COMPOUND SOLUTION OF IODINE IN DISINFECTION OF THE SKIN

To the Editor:—1. If a bandage on a finger is completely saturated with tincture of iodine, will it endanger the life of the finger? Is necrosis likely to occur? If so, in what time? Note the following quotation from a clipping. If the statement made in it had been regarding a 5 per cent or even a 2 per cent solution of phenol it would be credible to me, but I doubt the statement regarding tincture of iodine: "The writer recalls a sad case of mistaken zeal with respect to antiseptics when he was a medical student. A maid working for a doctor's wife cut her finger. The wife, knowing medicine by marriage, bound up the finger and, taking no chances, soaked the dressing with tincture of iodine. When the bandage was removed, the finger was literally dead and had to be duly bu ied." 2. Is one part of compound solution of iodine in 63 parts of water an efficient disinfectant? See following quotation from a clipping: "To summarize: A good antiseptic for the medicine cabinet can be assured by getting an ounce or two of Lugol's solution (which had better have a poison label), and a four ounce bottle. Put a half teaspoonful of Lugol's solution into the empty bottle and fill it with tap water. This gives you an antiseptic which, according to approved tests, is as powerful as merthiolate, as cheap as milk, practically stainless and odorless, and so nontoxic that any amount a little child might drink from the bottle of the dilution would in all probability do no harm. What more do you want?"

M.D., Washington.

ANSWER.—1. To bind up a finger and then saturate the dressings with tincture of iodine is so extraordinary a procedure that little can be found reported in the literature to indicate what the result would be. Similar treatment does not cause necrosis of the foot of a small laboratory animal, however. On theoretical grounds it does not appear likely that a finger would, under such circumstances, suffer any more than intense staining, with subsequent loss of more or less skin, even though full strength iodine solution had been used. Tincture of iodine evaporates rapidly, leaving a deposit of dry iodine on the skin which penetrates the local tissues slowly and is absorbed by the body and excreted in the form of iodides (Nyiri, William, and Jannitti, Marie: About the Fate of Free Iodine upon Application to the Unbroken Animal Skin: An Experimental Study, *J. Pharmacol. & Exper. Therap.* **45**:85 [May] 1932). Moreover, as soon as iodine reaches the deeper layers of skin it becomes extremely painful, differing in this respect from the phenol group of disinfectants, which produce anesthesia as they advance. Hence, in the case described, it is not probable that the patient would have left the dressing in place if the iodine had penetrated far enough to damage the deeper structures of the finger.

2. A solution prepared in the manner described would contain approximately 0.083 per cent of iodine and 0.167 per cent of potassium iodide in water. Such a solution could not be expected to reduce, by any significant amount, the number of bacteria which are ordinarily present on the skin. If, however, even weak solutions of iodine are subjected to the commonly employed in vitro tests of germicidal power or to ordinary rubbing and scraping tests for disinfection of the skin, they may, unless carefully controlled by an effective neutralizing agent for iodine, give negative and therefore misleading results, owing to the inevitable carrying over of traces of the strongly bacteriostatic iodine into cultures. Despite the claims cited, therefore, this dilute preparation of compound solution of iodine cannot be considered an efficient skin disinfectant.

PARALYZED URINARY BLADDER AND CYSTITIS

To the Editor:—A woman aged 38 fell from a horse ten years ago, sustaining a fractured lumbar spine with resultant paralysis of some leg muscles and the urinary bladder. She has had good orthopedic care and can walk with the aid of a cane and a steel brace on the right leg. The problem is this: The bladder can be emptied only by pressure above the symphysis, which she herself manages. This means that there is a small amount of residual urine, which means a chronic cystitis. This has gone on for ten years. Since she moved to this community two years ago I have kept her quite comfortable and the bladder quite clean by a thorough weekly irrigation of the bladder at my office and an instillation of 5 per cent mild protein silver. She was recently in St. Louis on a visit and was taken to a physician (a urologist) for her weekly irrigation. After the treatment he advised her to take mandelic acid for a few days every week or so in order to keep her urine more nearly normal. I had talked this over with her at previous times but had advised her against taking any urinary antiseptic which would cause sufficient renal irritation to bring down red blood cells in the urine. I am perfectly willing for her to take mandelic acid if it is not liable to cause nephritis in time. I am not writing to ask who is right but what to do. The urine can be completely sterilized but in a short time will be back where we started because the bladder cannot be completely emptied each time. She is remarkably well and free from urinary distress if she has a weekly irrigation with boric acid solution. Is the amount of infection which must be present (pus cells are present in the catheterized specimen varying from a few to ten or twenty per high power field, but the urine is always clear) apt in time to do more damage to the organism than periodic dosage with mandelic acid with consequent periodic (though mild) renal irritation? Is mandelic acid too new for this question to be answered? M.D., Michigan.

ANSWER.—The program carried out is a good one and should not be changed in any way. Mandelic acid, while not apt to cause nephritis, would probably not be recommended in this case. It might upset the stomach. The reason the infection in the urine recurs regularly after the urine has been sterilized is that the patient has residual urine.

It is possible that a presacral neurectomy is indicated in this case. It might be well to have a good neurologist examine the patient and discuss the possibility of this procedure. Finally, one might discuss the possibility of suprapubic cystostomy and establish a permanent drainage if presacral neurectomy is not indicated. Although this will prevent possible recurrence of bladder infection, it is a nuisance to walk around with permanent suprapubic drainage and should be done only as a last resort.

EPHEDRINE SULFATE FOR ENURESIS

To the Editor:—A girl, aged 8 years, has enuresis. Quite recently her mother told me of reading about a new treatment for this condition and she was under the impression that it was in Dr. Bundesen's column. Can you tell me whether there is such a treatment and where I can find it, if so? JOHN R. PHILLIPS, M.D., Michigan City, Ind.

ANSWER.—The treatment referred to is the use of ephedrine sulfate. The method is described in the Sept. 11, 1937, issue of the *Lancet*. The treatment is based on the observation that, in the therapy of asthma with ephedrine, periods of anuria occurred. The amount of ephedrine is greater than that of the usual therapeutic dose. The experiments were carried out by Dr. R. W. Brookfield.

GLOBULIN DETERMINATION OF SPINAL FLUID

To the Editor:—What are the practical methods of globulin determination of the spinal fluid for office procedure? As the junior scopometer is no longer available, what other instruments may be used for globulin determination of the spinal fluid and where may they be obtained?

A. J. REICH, M.D., New York.

ANSWER.—Probably the simplest and most practical method of estimating the globulin of cerebrospinal fluid is that described by Matz and Novick (*J. Lab. & Clin. Med.* **15**:370 [Jan.] 1930) under the title "Improved Colorimetric Procedures for the Quantitative Estimation of the Proteins of the Cerebrospinal Fluid." This is a slight modification of procedures described by Wu (*J. Biol. Chem.* **51**:33 [March] 1922), Ling (*ibid.* **69**:397 [Aug.] 1926) and Wu and Ling (*Chinese J. Physiol.* **1**:161 [April] 1927). The method "Clinical Determination of the Albumin Globulin Ratio in Spinal Fluid" by Exton and Rose (THE JOURNAL, Jan. 3, 1931, p. 36), in which the junior scopometer is employed, could probably be used with other instruments for measuring turbidity. The Wu colorimetric procedure employed by Matz and Novick requires a centrifuge and a colorimeter, instruments which should be available in every clinical laboratory. Either a Klett biocolorimeter or a B. & L. biologic colorimeter is satisfactory.

Most American authorities (Merritt and Fremont-Smith: The Cerebrospinal Fluid, Philadelphia, W. B. Saunders Company, 1937, p. 33) seem to feel that the determination of the protein fractions in spinal fluid, in addition to the total protein, is of insufficient clinical value to justify the work involved. The simplest satisfactory method for total protein is the Denis-Ayer method modified by Ayer, Dailey and Fremont-Smith (*Arch. Neurol. & Psychiat.* **26**:1038 [Nov.] 1931). Extensive studies, in which the protein fractions have been determined, have been made (Kafka: Die Zerebrospinalflüssigkeit, Leipzig and Vienna, 1930). The paper of Matz and Novick reports a large number of observations on albumin, globulin, total protein and the albumin-globulin ratio, chiefly in various forms of syphilis.

ACTION OF SNUFF ON NOSE

To the Editor:—If pulverized tobacco snuff is a mucous membrane irritant when drawn by inhalation into the nasal passages, how can it produce better breathing for having used it? Your help in solving what appears to be an incongruous situation, irritants producing congestion yet better breathing, will be greatly appreciated. M.D., Louisiana.

ANSWER.—Snuff is a primary irritant and causes a burning feeling when first inhaled. Later on, as the habit is formed, the burning feeling is replaced by a sense of exhilaration. When the snuff is inhaled there results, as with the inhalation of all irritating materials, an excess flow of mucus and serum, which is followed immediately by sneezing and blowing of the nose, thus clearing the passages. This explains the fact that there is more breathing space after using such an irritant.

However, there are three dangers in the use of snuff. In long continued cases there is a tendency to atrophic rhinitis. In addition, polyps seem to occur rather frequently in users of snuff, and because of the excess of sneezing and blowing there is a distinct liability to infection of the sinuses.

ORGANIC DISEASE OR HYSTERIA FROM LIGHTNING

To the Editor:—A middle aged woman was sitting near a window in a shoe shop working on her machine when lightning struck, resulting in some fire damage to the building. When this occurred the patient had convulsive seizures, became unconscious and was taken to the hospital in an ambulance. This condition persisted for more than twenty-four hours and when consciousness was regained the patient complained of severe headache particularly on the left side, pain and deafness of the left ear and loss of vision of the left eye. Also at the slightest noise she would begin to shake and tremble. Since this incident, which happened seven months ago, the patient has had a draining left ear, there is practically no sight in the left eye and she is still complaining of nervousness and headache. All the various laboratory tests, including Kahn, Kline and Hinton tests and urine and blood counts, have been negative. A spinal tap has not been done. In your opinion is this a traumatic or fright neurosis superimposed by hysteria or is it possible that the lightning did strike her wthout leaving any sign of a burn? Is it possible for lightning to strike a person without leaving any sign of burns at the site of entrance? What is your opinion as to further treatment and as to prognosis? A competent ophthalmologist examined the eye and found the optic disk normal.

M.D., Maine.

ANSWER.—It is rash to offer an opinion on such a case without examination. However, the account suggests fright-neurosis with conversion hysteria, rather than a condition resulting from a strictural lesion.

For purposes of diagnosis of hysteria a normal appearing optic disk would be the condition of the pupils. Obliteration or serious reduction of light or convergence reflexes in the pupil would of course be strong evidence in favor of organic disease. It is most unlikely that complete blindness of an eye sustained by lightning of organic nature could exist with normal pupillary reflexes. If the diagnosis of hysterical blindness and deafness is correct the treatment is one of suggestion, i. e. succeeding in persuading the patient that blindness and deafness are not really existing. This is a matter of personal power on the part of the physician.

PROSTATIC STONES

To the Editor:—Please discuss the treatment for prostatic calculi in a man of 47. The stones have not caused symptoms. They are located too deep in the gland to be removed through endoscopy. One of the stones is about the size of a hazelnut and the others about two-thirds that size. Is removal by surgical intervention, that is, suprapubic cystotomy, advisable in the absence of symptoms? M.D., Arkansas.

ANSWER.—The general consensus among urologists is that the mere presence of stones in the prostate is no indication for their removal. If the stone or stones do produce symptoms, they may be removed. This may be accomplished by (1) removal of the stones by means of the resectoscope—removing the overlying prostatic tissue and washing the stones out of the prostatic bed, or milking them into the bladder and then evacuating them through the sheath of the resectoscope, (2) perineal prostatotomy or (3) suprapubic cystotomy.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, April 29, page 1754.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. Medical centers having five or more candidates desiring to take the examination, June 19-21 and Sept. 11-13. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th Street, Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF ANESTHESIOLOGY: An Affiliate of the American Board of Surgery. *Oral* examinations for all candidates, St. Louis, May 13-14. *Written.* Various places throughout the United States, Sept. 9. Applications must be filed by July 11. *Oral.* Part II. Philadelphia, Oct. 14-15. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: Philadelphia, Oct. 30-Nov. 1. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Various sections of the United States, Oct. 16 and Feb. 19. Formal application must be received before Aug. 20 for the Oct. examination and on or before Jan. 1 for the Feb. examination. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: General oral, clinical and pathological examinations for all candidates, Part II examinations (Groups A and B) will be held in St. Louis, May 15-16. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* Various cities throughout the country, Aug. 5. *Oral.* St. Louis, May 15 and Chicago, Oct. 7. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: St. Louis, May. Sec., Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: St. Louis, May 12-13 and Chicago, Oct. 6-7. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PEDIATRICS: Cincinnati, Nov. 15. Appointments must be made before July 15. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: Chicago, May 13. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: St. Louis, May 11-14. Sec., Dr. Byrl R. Kirklin, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Part II.* New York, May 8 and May 9. Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

AMERICAN BOARD OF UROLOGY: White Sulphur Springs, W. Va., May 26-28. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

District of Columbia January Report

Dr. George C. Ruhland, secretary, Commission on Licensure, reports the written examination held in Washington, Jan. 9-10, 1939. The examination covered nine subjects and included sixty questions. An average of 75 per cent was required to pass. Twelve candidates were examined, all of whom passed. Eleven physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
George Washington University School of Medicine		(1934) (1936)	81.1, 83.5, 85, (1937) 79.5, 82.3, 83.2
Georgetown University School of Medicine		(1937)	80.5
Howard University College of Medicine		(1935) (1937)	79.1, 75.1
School of Medicine of the Division of Biological Sciences		(1935)	81.5
Hahnemann Medical College and Hospital of Philadelphia		(1937)	82.7
Jefferson Medical College of Philadelphia		(1937)	81.1

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
George Washington University School of Medicine		(1936), (1937, 4)	N. B. M. Ex.
Georgetown University School of Medicine		(1935), (1937, 2)	N. B. M. Ex.
Howard University College of Medicine		(1932)	N. B. M. Ex.
Tufts College Medical School		(1936)	N. B. M. Ex.
Cornell University Medical College		(1937)	N. B. M. Ex.

Minnesota January Report

Dr. Julian F. Du Bois, secretary, Minnesota State Board of Medical Examiners, reports the oral, written and practical examination held at Minneapolis, Jan. 17-19, 1939. The examination covered twelve subjects and included sixty questions. An average of 75 per cent was required to pass. Forty candidates were examined, thirty-nine of whom passed and one failed. Six physicians were licensed by reciprocity and four physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Emory University School of Medicine		(1934)	85.6
Northwestern University Medical School		(1936)	83.2, 88.2
Rush Medical College		(1938)	87.3
University of Illinois College of Medicine		(1937)	93
Indiana University School of Medicine		(1936)	86.3
Johns Hopkins University School of Medicine		(1935) (1937)	83.1, 89.3
University of Michigan Medical School		(1930)	84.6
University of Minnesota Medical School		(1935) (1936)	86.3, 92.2, (1937) 90.3, (1938) 82.6,* 83,* 83.1,* 84.3,* 85,* 85.2,* 85.5,* 86.2,* 86.5,* 86.6, 87.1, 87.4, 87.5, 87.6,* 87.6,* 88.1,* 88.1, 88.3, 91.2
Ohio State University College of Medicine		(1938)	83.6
University of Oregon Medical School		(1937)	93.2
Jefferson Medical College of Philadelphia		(1931)	81.3
University of Pennsylvania School of Medicine		(1935) (1936)	85.6, 90.4
University of Texas School of Medicine		(1934)	89.2
Marquette University School of Medicine		(1938)	89.6
University of Wisconsin Medical School		(1937)	85.1

School	FAILED	Year Grad.
University of Toronto Faculty of Medicine		1916

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School		(1925) (1933)	Michigan, Wisconsin
Rush Medical College		(1936)	W. Virginia
University of Pennsylvania School of Medicine		(1936)	N. Carolina
University of Virginia Department of Medicine		(1931)	Virginia
University of Wisconsin Medical School		(1935)	Virginia

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Northwestern University Medical School		(1938)	N. B. M. Ex.
Cornell University Medical College		(1935, 2)	N. B. M. Ex.
University of Edinburgh Faculty of Medicine		(1933)	N. B. M. Ex.

* This applicant has received the M.B. degree and will receive the M.D. degree on completion of internship.

Book Notices

Silicosis and Asbestosis. By Various Authors. Edited by A. J. Lanza, M.D., Assistant Medical Director, Metropolitan Life Insurance Company. Cloth. Price, $4.25. Pp. 439, with 59 illustrations. New York, Toronto & London: Oxford University Press, 1938.

For the past ten years this country has seen marked scientific interest in the dusty lung diseases. This has led to numerous publications, trials, conflicting testimony, legislative enactments, theories and alleged palliatives. Slowly there emerge the significant facts. This book is a record of the accrued substantial observations made with regard to the two chief dusty lung diseases, silicosis and asbestosis. Its able editor, rather than author, Dr. Lanza, participated in the first well planned investigation of silicosis in this country near the year 1915, carrying out activities in the tristate lead and zinc mining district in the vicinity of Joplin, Mo. Other contributors are Drs. Sayers, Prendergrass, Gloyne, Gardner and Middleton. All have participated extensively in many investigations of dusty lung diseases. They discuss the history of silicosis and asbestosis, clinical aspects, x-ray diagnosis, chemical and experimental pathology, preventive measures, legislation, public health and economic aspects. While all sections are meritorious, the lengthy chapter on x-ray diagnosis is especially well presented. During the turmoil centering about dusty lung diseases for the past ten years it has been necessary often to make apologies for the medical profession for lack of familiarity with silicosis and later with asbestosis. Now the lament can no longer be made that in the English language there is no reliable comprehensive medical presentation on dusty lung diseases.

The printing is not as good as the contents. Several pages intended to be printed are left blank. Some lack of uniformity in the arrangement of the sections exists. Spacing, such as that in the table of contents, is poorly arranged. The repetition of the various titles of the authors in each chapter heading is superfluous. In general the contents reflect to a high degree the art and science of medicine, but the make-up is not an equally good example of the art of printing.

La fluorescence en biochimie. Par Ch. Dhéré, professeur de physiologie à l'Université de Fribourg (Suisse). Paper. Price, 80 francs. Pp. 318, with 108 illustrations. Paris: Les Presses Universitaires de France, 1937.

The first three chapters give a fairly inclusive treatment of the fundamental principles of fluorescence, of its demonstration and of the apparatus and methods for recording and measuring it. A brief chapter covers the fluorescence of carbohydrates and glucosides as well as the changes in fluorescence in the treatment of simple carbohydrates with the common reagents such as bases, acids and furfural indicators. Chapter V briefly covers pure

fatty acids, natural oils in various solvents, sterols and the fluorescence of various color reactions of sterols. The proteins, native and derived, and amino acids and some of their color reactions are covered in the next chapter. Alkaloids, chlorophylls, bile pigments and porphyrins are naturally treated in considerable detail in separate sections. Two chapters cover a miscellaneous variety of substances of biologic interest, among which may be emphasized inorganic salts, vitamins, hormones, related compounds and cancerogenic hydrocarbons. In a separate chapter the literature on the application of fluorescence methods to blood serum, milk urine, bile and cerebrospinal fluid are presented. The last chapter is devoted to the fluorescent properties of bacteria and yeast and their interpretation. At the close of each chapter is a good bibliography, and the final pages of the book contain twenty-seven excellent reproductions of emission, absorption and fluorescence spectrums. The book is well indexed.

Dental Science and Dental Art. Edited by Samuel M. Gordon, Ph.D. Cloth. Price, $9.50. Pp. 731, with 224 illustrations. Philadelphia: Lea & Febiger, 1938.

One of the important dental publications in 1938, this book is of special value and interest to both the dental and the medical profession. It is concerned with fundamental, basic and scientific principles of dental practice rather than with technical details. For the dentist it should strengthen and clarify the scientific basis of his procedure and for the physician it will clear up many traditional errors. There are twenty-two chapters, supplied by nineteen authors, the editor, Dr. Gordon, contributing the eleventh chapter, on calcium and phosphorus compounds in relation to dental nutrition. Each chapter is an independent treatise, but all are so admirably selected and so integrated by cross references that the book constitutes a unit.

The first and second chapters, on tooth development and experimental dental histophysiology, by Isaac Schour, deal with the calcification pattern of the teeth, which, like the developmental rings of the tree, records the experiences of the individual's life history. Experimental data reveal the rat incisor to be a most sensitive index of metabolic disturbances, particularly of vitamin deficiencies and endocrine dysfunctions. Dr. Schour's exposition presents the subject with simple clarity and logic and captivates the interest of the layman as well as the experienced investigator.

Chapter III, by Maxwell Karshan, deals with the chemical composition of human teeth and the calcium-phosphorus metabolism as related to the calcification of the teeth. Chapter IV, on biology of the investing structures of the teeth, by Bernhard Gottlieb and Balint Orban, is an excellent summary of the valuable work of the Vienna group on this subject. Many American scholars are not in accord with some of the conclusions presented. The statement "the endeavor to place the edge of a restoration below the gingival margin is not to be recommended because of the possibility of damage to these parts" is not in accordance with the best American opinion. It is contrary to the clinical experience of fifty years and tends to reduce the therapeutic value of a filling operation.

Chapter V on the biologic aspects of orthodontia, by Allan G. Brodie, is strongly recommended to pediatricians as well as to dentists. It is an interesting and clear presentation of present knowledge with regard to growth and development, especially of the bones of the head and face. The reading of this chapter would greatly improve general knowledge of the possibilities and limitations of orthodontic treatment. For the orthodontist it should clarify his concepts of the relationship between mechanical stimulation and growth and of the factors which contribute to the development of the normal denture.

The physiology of the saliva and salivary calculus are discussed in chapters VI and VII by B. P. Babkin and Theodor Rosebury. The subject of dental caries is treated in three chapters, on the problem of dental caries, by Theodor Rosebury, biologic aspects of dental caries, by Maxwell Karshan, and bacteriologic and immunologic changes in dental caries, by Philip Jay. They constitute an excellent review and summary of the work in this field. An enormous amount of factual material has been accumulated by widely different methods of attack. The result may be a feeling of confusion in the minds of readers not directly engaged in the study of this subject. The clinician appreciates the need of a closer coordination between a clinical and laboratory study of the disease. The subject of mottled enamel, of vital importance to those who live in areas in which the condition is endemic, is well treated by H. T. Dean.

The two chapters on Vincent's infection (trench mouth) deserve special recommendation to practitioners, both of dentistry and of medicine. Dr. Rosebury discusses the etiology and Dr. Harry Lyons the clinical aspects and therapy. Chapter XV is a glance at the special pathology of the oral cavity by Theodore Cornbleet. Chapter XVI also should be strongly recommended to medical practitioners. In it Harry Lyons presents sanely the present status of knowledge with regard to the pulpless tooth and factors concerning its therapy.

Dental restorative materials are discussed by Floyd A. Peyton, principles of inhalation anesthesia by Edward B. Touhy, local anesthesia by Maurice L. Tainter and antiseptics and disinfectants by Thomas G. Hull. The last chapter, on statistical methods in dentistry, by William M. Gafafer, is especially in point at the present time. It is a brief and clear presentation of the fundamental principles of the statistical method. The published results of many investigations have been misleading because of the author's limited comprehension of these principles. Surely the chapter will be of great value to the dentist and the physician who, educated before the era of the scatter diagram and graph, find it difficult to grasp quickly material presented in this form.

Altogether the book is, as the title indicates, a summary of dental science and dental arts, and the professions are indebted to the editor, Dr. Gordon, for his accomplishment.

Septische Chirurgie. Von Dr. med. habil. Fritz Schörcher, Dozent für Chirurgie an der Universität München. Mit einem Geleitwort von Professor Dr. G. Magnus. Paper. Price, 20 marks. Pp. 270, with 74 illustrations. Leipzig: Johann Ambrosius Barth, 1938.

This textbook is intended primarily for general practitioners. It does not discuss therefore such conditions as peritonitis or any other septic condition or disease affecting the abdominal or pelvic organs. After a few introductory chapters dealing with anesthesia, preparation for operation, treatment of wounds, and general treatment of the patient with an infectious process, the book is devoted to some of the more important septic conditions affecting the various parts of the body. Among these are erysipelas, tetanus, furuncle, carbuncle, empyema, osteomyelitis, infections of the hands and perinephric and subphrenic abscess. The book is far from being all inclusive. However, the subject matter considered is presented in clear simple style and is very complete, including etiology, pathology, symptoms and treatment in great detail. The book is adequately and even beautifully illustrated, with excellent reproductions of photographs and drawings, some of them in color. It is practical and fulfils the purpose for which it was intended.

Your Chest Should Be Flat: The Deep Chest Makes Better Soil for Tuberculosis. By S. A. Weisman, M.D., F.A.C.P., Assistant Professor of Medicine, University of Minnesota, Minneapolis. Cloth. Price, $2. Pp. 145, with 74 illustrations. Philadelphia, New York, Montreal & London: J. B. Lippincott Company, 1938.

This interesting little monograph should be read by general practitioners, internists, pediatricians, medical students and laymen. To quote Dr. Richard E. Scammon of the University of Minnesota, who wrote the foreword, "it is a happy example of the fusion of quantitative science with practical application." Many physicians and laymen believe that the normal chest is deep and round and that the tuberculous chest is flat; therefore the title of this book will be a shock to many persons. However, after reading the contents, which cover a vast amount of work and analyses, they will be made to understand the true dimensions of the normal chest. The author's conclusions are based on the chest measurements of more than 20,000 Minneapolis school children, the measurements of many infants from birth to school age and measurements of adults. The information is divided into the fetal, the infantile, the childhood and the adult thoracic indexes to show the normal development of the chest through life. Dr. Richard Scammon, who has done a great deal of work on the measurements of the human body, defines the thoracic index as "the value determined by dividing

the anteroposterior diameter of the chest at the nipples by the transverse diameter at the same level." The instrument the author used is the pelvimeter. In taking the measurements of the chests of older girls and adult women with pendulous breasts, the measurements are made at the level of the fourth costal interspace in the midclavicular line. In his acknowledgment the author gives thanks to many well known men in the medical sciences at the University of Minnesota and also to those prominent in tuberculosis control, in health department work and in education in the city of Minneapolis who have aided him and approved of his specialized study. The value of this contribution to medical literature lies in the fact that it offers an added weapon to those who have to do with tuberculosis surveys of school children.

Practical Physiological Chemistry for Medical Students. By G. M. Wishart, D. P. Cuthbertson and J. W. Chambers. Second edition. Boards. Price, 4s. Pp. 128, with illustrations. Glasgow: John Smith & Son, Limited, 1938.

The second edition of this laboratory manual is but little changed from the first, which was a manual for poorly equipped laboratories, all the determinations being done with inexpensive apparatus. There is a colored plate of spectrums of hemoglobin and its derivatives. There seems to be some uncertainty as to what is meant by the spectrum of acid hematin, since it is insoluble in water, alcohol, ether or chloroform. Furthermore, on page 89 it is stated that acid hematin treated with ammonium sulfide will be altered to hemochromogen, and in the chart facing page 84 hemochromogen is said to contain denatured globin. Experience shows that it is necessary to add a protein to pure hematin to get it in solution. Therefore it seems more logical to consider acid hematin as oxidized hemachromogen and to reserve the name hemin for the protein free compound. Hemoglobin in blood is determined by changing it to carbonyl-hemoglobin by passing illuminating gas and then comparing it with a standard of carbonyl-hemoglobin. No directions are given for the preparation of this standard, and one is led to infer that it is made by taking pooled blood of a number of normal individuals and passing illuminating gas.

Drug Addicts Are Human Beings: The Story of Our Billion-Dollar Drug Racket, How We Created It and How We Can Wipe It Out. By Henry Smith Williams, M.D., B.Sc., LL.D. With a Statement of the Narcotics Problem. By Hon. John M. Coffee (Reprinted from the Congressional Record). Cloth. Price, $2.50. Pp. 273, with 9 illustrations. Washington, D. C.: Shaw Publishing Company, 1938.

The publisher's advertisement on the wrapper designates this book as an "amazing story." It is amazing in respect to the type of logic embodied, not to mention the scurrilous attack on those charged with the enforcement of the so-called antinarcotic laws. These laws are based on international agreements between some fifty nations, of which the United States is one. Thinking men and women of the world, through their official representatives at the international council tables, have agreed that narcotic drugs, especially opium or its derivatives, shall be manufactured, distributed, sold and used only for medical and scientific purposes. The United States government has, in accordance with the agreements, of which there are several dealing with various aspects of the problem, enacted restrictive legislation to accomplish their purpose. The author, because of the restrictive aspects of the legislation, believes that it has worked undue hardship on addicts, has made them criminals and has crucified 25,000 American physicians. Moreover, he alleges that such legislation has been responsible for the creation of an illicit drug traffic. It is obvious that as long as there are drug addicts in the world and as long as there are depraved men and women eager to supply them with drugs there will be attempts at developing an illicit traffic in such drugs. Furthermore, there is no doubt that restrictive laws are meant to be restrictive and are enacted and enforced as a measure for the greatest good to the greatest number. In general the theme of the author is that drug addicts should be supplied on prescription with whatever medicine they need, because such drugs are "absolutely essential to their comfort, well-being, or even lives"; this is in the main a hedonistic approach to the problem. In connection with the theme, one is prompted to inquire whether or not the administration of narcotic drugs in nondiminishing doses to those addicted thereto for the satisfying of a craving comes within the scope of bona fide medical practice. The United States Supreme Court has answered this question in the negative. On the whole the book adds nothing to the problem of drug addiction and is largely directed toward a personal and individual criticism of those charged with the enforcement of the narcotic laws. Such criticisms tend to assume the flavor of personal vindictiveness.

The Five Sisters: A Study of Child Psychology. By William E. Blatz, M.A., M.B., Ph.D., Professor of Child Psychology, University of Toronto, Toronto. Cloth. Price, $2.50. Pp. 209, with 40 illustrations. New York: William Morrow & Company, 1938.

The author of this book, a recognized psychologist, has done a great deal of work with preschool children and constructive psychologic work in the study of twins, so that it seems fortunate that he was the person selected for the Dionne quintuplets. He has written a most interesting book. It is rather light, but he has not hesitated to put in semitechnical diagrams and charts showing the growth and development of these five unusual children. He deals particularly with the psychologic factors involved in their growth and explains in a lucid and sensible fashion the fact that in most of the features which would be considered important in evaluating a child's mentality, for example the use of words and psychomotor adjustment, they have been retarded. He attributes this particularly to the fact that they were premature and shows that recently they have had a tendency to catch up in an unusually rapid fashion, the indications being therefore that they are of normal mentality. He stresses a number of unusual features about their environment and bringing up. For instance, they have been surrounded with a highly alert group of professional people who have been able to take care of their wants without too much use of language on the part of the children, thus retarding their development in speech. He also points out that their environment has been somewhat limited. He makes, without much interpretation, a number of unusual comments, for example that the children, even though they cannot see the observers in the observation gallery, are alert to their presence and will laugh sympathetically with the gallery when something unusual occurs. This is an excellent work, carefully thought out and well written in a style which makes it highly readable. Pediatricians, child psychologists and others who are interested in children's development, as well as laymen who want to know something about these quintuplets, should be interested in reading it.

Diseases of the Nose, Throat and Ear. By W. Wallace Morrison, M.D., Clinical Professor and Chief of Clinic, Department of Otolaryngology, New York Polyclinic Medical School and Hospital, New York. Cloth. Price, $5.50. Pp. 675, with 334 illustrations. Philadelphia & London: W. B. Saunders Company, 1938.

This is an excellent textbook, easily read, concise and at the same time complete. According to the preface it was written for undergraduate students and general practitioners. Its objective has been well attained, for in it one finds simplicity of description without loss of necessary detail or accuracy. This is necessary for the nonspecialist who has need of a source book to solve his special problems. There is a minimum of theory and no excess of controversial details concerning treatment. The latter is sensible and in the best spirit of present day otolaryngologic teaching. One may differ with the author about a number of things, such as his rather active treatment of acute sinusitis, for which the displacement method is recommended, though it is not advocated by Proetz, who introduced it; but these are minor matters. The book has numerous pen and ink sketches of disease conditions, anatomic details and technical procedures. Many of them are ingenious and help remarkably to clarify the text. Pathologic states, however, do not lend themselves well to illustrations of this kind. Perhaps the second edition, which this work no doubt will have, will improve this situation by the use of colored illustrations in those instances wherein the present ones are inadequate. One may say that there are few modern textbooks on otolaryngology which have so well incorporated the newer technics and medications based on the physiology of the nasal mucosa as investigated in recent years by Hilding, Proetz, Lierle, Cannon, Fenton and Larsell. The symptom index at the end of the book is of great reference value.

Thalassa: A Theory of Genitality. By Sandor Ferenczi, M.D. Authorized translation from the original German version entitled Versuch einer Genitaltheorie, by Henry Alden Bunker, M.D. Cloth. Price, $1.75. Pp. 110. Albany, New York: The Psychoanalytic Quarterly, Inc., 1938.

The German volume from which this book was translated was published in 1923 but was conceived and written between 1914 and 1919, during the war, in the author's leisure time. It is important to stress the time element, since it dates the expressed ideas to a period of psychoanalytic development which, in the short life of that science, was decidedly early. The work is a product of a time when psychoanalysis was concerned with metapsychologic speculations and was far removed from biology and medicine. The author has attempted to base his theory of genitality on biologic data and phylogenic concepts by analogy, and his speculations are highly provocative. The work is an extremely interesting and fascinating speculation but indicates the need for development of a method other than that of analogy to link biology and psychology. The fundamental premise is a lamarckian concept of evolution on which teleologic bases of evolution interpreted from psychology rest. Biologists should by all means be acquainted with this book.

Internal Medicine in Dental Practice. By Bernard I. Comroe, A.B., M.D., F.A.C.P., Instructor in Medicine, Schools of Medicine and Dentistry in the University of Pennsylvania, Philadelphia, Leon H. Collins, Jr., A.B., M.D., F.A.C.P., Associate in Medicine in the University of Pennsylvania School of Medicine, Philadelphia, and Martin P. Crane, B.S., M.D., Instructor in Medicine in the Schools of Medicine and Dentistry of the University of Pennsylvania, Philadelphia. Cloth. Price, $4. Pp. 352, with 45 illustrations. Philadelphia: Lea & Febiger, 1938.

This book has been written primarily for dentists and dental students, presenting the necessity of close collaboration between dentist and internist, as stated in the introduction: "Dentists frequently are afforded the opportunity of observing manifestations of systemic disease in individuals before these patients seek medical aid." There seems to be an underlying motive to interest the dentist in public relations work for the physician with a hope that the general public may come to appreciate a necessity of frequent physical examinations. There is little or no reference to the help a physician might be to a patient by observing foci of infection in the mouth and directing the patient to have dental attention. The text is written in clear, concise and convincing style, treating systemic diseases in twelve parts. Each part has a well planned medical summary describing specific diseases and their manifestations in the oral cavity. In each part adequate references are listed, so that more detailed information may be obtained if desired. This book should be of real value to dental schools as an accessory textbook.

Die Therapie der Thrombose. Von Dr. Ernst Friedländer. Paper. Price, 5.40 marks. Pp. 117, with 27 illustrations. Leipzig & Vienna: Franz Deuticke, 1938.

The author reviews the anatomic and pathologic aspects of thrombosis. He concurs in the view that emboli are derived from fresh thrombi and that those which occur in the third week following venous thrombosis result from newly formed thrombi. While he has established anatomic considerations well, certain physiologic conclusions lack the necessary evidence, for example that the femoral vein may be empty in a bedridden patient. The fact that in the prone position the blood travels in the femoral vein up a 34 per cent grade is important in the genesis of thrombophlebitis. The etiology of venous thrombosis is extensively reviewed but no new contributions are made. The author's main objectives in the management of thrombophlebitis are fixation of the thrombus and restoration of circulation. He believes that ambulatory patients with phlebitis should remain ambulatory and that patients confined to bed when phlebitis occurs should be put through a series of positions and graduated exercises. He believes that his method of treatment reduces the incidence of pulmonary embolism but it is to be regretted that there is not good proof of this. He stresses the danger of pulmonary embolism after thrombophlebitis, yet it has been emphasized in the American literature that embolism seldom follows phlebitis. A recent article states that thrombophlebitis was recognized clinically in only five of 116 consecutive cases of fatal postoperative pulmonary embolism. It is doubtful that the complicated exercises outlined are necessary, for patients appear to convalesce satisfactorily from phlebitis if they remain in bed with the involved leg elevated and warmed by moist packs until the tenderness over the inflamed vein has disappeared, the oral temperature has returned to normal and the edema has disappeared. The author states that with his method of treatment the average period of disability has been reduced from seventy-six to six days. The former figure is considered archaic in this country, since most patients become ambulant from eighteen to fourteen days after the onset of phlebitis when given much simpler treatment than that outlined. If one considers the mental and physical comfort of the patient in addition, the value of the author's management remains doubtful. The monograph suffers from repetition and theorization. Its chief value is in reviewing the subject of thrombosis and reemphasizing that it is not necessary to keep patients with thrombophlebitis in bed for long periods.

Synopsis of Clinical Laboratory Methods. By W. E. Bray, B.A., M.D., Professor of Clinical Pathology, University of Virginia, Charlottesville. Second edition. Fabrikoid. Price, $4.50. Pp. 408, with 68 illustrations, including 17 color plates. St. Louis: C. V. Mosby Company, 1938.

Two years ago the first edition of this excellent synopsis appeared. It had 324 pages, contained descriptions of the most frequently used laboratory tests and was well liked by physicians and technicians. In the second edition it has been enlarged but the arrangement of the chapters has remained the same. More attention has been given to the clinical significance of laboratory observations. The descriptions of the various procedures are brief but adequate. The black and white illustrations have been increased from thirty-two to fifty-one and the color plates from eleven to seventeen. Additional methods described include the determination of serum phosphatase, titration of staphylococcus antitoxin, use of the peroxidase Giesma stain, cough plate method for the diagnosis of whooping cough, vitamin C titration, test for cyanates in the blood, determination of sulfanilamide in the blood and differential heterophil agglutination for infectious mononucleosis. There are chapters on poisons and foreign substances and on surgical pathology and one listing indicators, stains and reagents. This manual is one of the best small books on laboratory diagnosis.

Nogle Undersøgelser over Nyrefunktionen ved Epilepsi. Af Alf. Yde. [Studies on Renal Function in Epilepsy.] Denne Afhandling er af det lægevidenskabelige Fakultet antaget til offentlig at forsvares for den medicinske Doktorgrad, København. Paper. Pp. 136. Copenhagen: NYT Nordisk Forlag, Arnold Busck, 1937.

This is a doctorate thesis based on extensive personal investigations of every phase of renal function in epileptic subjects observed in the university psychiatric clinic of Copenhagen and the epileptic colony "Filadelfia." Among the conclusions are that there is no definite relationship between diuresis and the epileptic attack. The author has been unable to confirm the hypothesis of preparoxysmal oliguria and postparoxysmal polyuria. The urea clearance rises above the normal upper limit for some hours before an attack and falls suddenly after the attack. It is suggested that the preparoxysmal rise may be caused by central irritation brought about by a moderate increase in epinephrine, while determinations of the chlorine in the plasma and urine did not lead to its explanation. Finally, it is concluded that functional alterations in the vegetative centers in the midbrain play a part in the precipitation of epileptic attacks.

Practical Birth-Control Methods. By Norman E. Himes, Ph.D. With the medical collaboration of Abraham Stone, M.D. Introduction by Robert L. Dickinson, M.D. Foreword by Havelock Ellis. Paper. Price, 95 cents. Pp. 254, with 29 illustrations by Irving Geis. New York: Modern Age Books, 1938.

In this book, written in a simple pleasant style, birth control and allied subjects are discussed in a comprehensive manner denoting the authors' thorough understanding of this vital problem. The medical aspects of contraception are ably presented, together with effective anatomic diagrams for instruction purposes. Common misconceptions and causes for failures of the various methods are explained clearly. The book is replete with many practical details, often neglected, which are of considerable importance in the teaching of contraception. There are a number of interesting topics other than the medical aspects which are educational: legal aspects, abortion, history of contra-

ception, sterility and other subjects are presented clearly in nontechnical language. An admirable feature of the book is the discussion of the social, economic and religious backgrounds of the individual in respect to the practice of contraception. These environmental factors are intimately involved in the majority of problems, and the authors are to be complimented on the sympathetic and reasonable handling of these subjects. An informative appendix adds to the value of the book.

Les maladies de l'œsophage. Par J. Terracol, professeur à la Faculté de médecine de Montpellier. Avec la collaboration de J. Baumel et al. Cloth. Price, 220 francs. Pp. 664, with 352 illustrations. Paris: Masson & Cie, 1938.

At first thought it would seem improbable that any one could write a book of 664 pages on the esophagus alone, but actually Dr. Terracol and seventeen collaborators have done the trick. What is even more remarkable is that an examination of certain chapters, such as the one on cardiospasm, reveals that a good deal more might well have been written. In fact, the main criticism one might bring against the book is that so little is written about the treatment of cardiospasm, which is the most common disease of the esophagus. The authors seem never to have heard of the Plummer dilator, which works beautifully in most cases, and they give some space to a discussion of the old transabdominal operation, which should probably never be used. Certainly if this book goes into a second edition the authors should describe the Plummer-Vinson technic and should show the tremendous advantages of passing the dilating instrument over a thread which has previously been swallowed and allowed to pass down into the small bowel, where it is in a way anchored. Another criticism that might be directed against the book is that in places the authors might have done better to describe only the treatments which they have found useful. It only clutters up the literature to describe those which are of little if any value. These criticisms, however, should not be allowed to obscure the fact that the book contains a tremendous amount of information presented in an attractive way. Every medical library of any size should have a copy. It is well illustrated and there are some colored plates showing the esophagus as seen through the electrically lighted tube. There are good bibliographies attached to the chapters, but unfortunately there is no index.

Aids to Embryology. By Richard H. Hunter, M.D., M.Ch., Ph.D., Lecturer in Anatomy, Queen's University, Belfast. Third edition. Cloth. Price, $1.25. Pp. 178, with 44 illustrations. Baltimore: William Wood & Company, 1938.

Here is a series of brief summaries to each of which a still briefer summary is appended. The object is to provide clear and concise statements which can be memorized and used to answer questions in examinations. In this edition discussions on heredity and the current ideas as to the endocrine regulation of the female reproductive system have been added to meet new requirements of the British Medical Council. The author hopes too that he has provided enough information so that the student can take a rational and understanding view of congenital abnormalities. It is probable that the student cannot assimilate much more embryology than this unless he can come into personal contact with some of the kaleidoscopic changes of ontogeny. Often the treatment is necessarily so inadequate as to give no ideas whatever (see coelom); there are merely some pertinent phrases which may enable the student to indicate that he has heard mention of the subject in question. Some quite unnecessary mistakes have crept in, especially in the chapter on the nervous system. In an appendix there is a discussion of fetal age, with data on the time of appearance of certain ossification centers and a list of characters which can be used to estimate the age of viable fetuses.

Vom Wesen der Neurose und von ihren Erscheinungsformen. Von Dr. Ernst Speer, Nervenarzt in Lindau (Bodensee). Paper. Price, 3.60 marks. Pp. 122, with one illustration. Leipzig: Georg Thieme, 1938.

Neuroses are never permanent states in the sense of inherited and unmodifiable characteristics but always follow disturbances in assimilating and reacting to life experiences. They are partial solutions to the experience and as such indicate the possibility within the person of a satisfactory terminal solution. Neuroses are not due to structural abnormalities of the brain, either histopathologic or chemical, nor are they the results of extrapersonal demoniacal agents. The individual, furthermore, is guiltless in his illness. No neurotic consciously develops his difficulty; the neurosis develops from the unconscious. These excerpts are evidences of the dynamic concepts of the author, remarkable only because of their source. This is one of the few books that indicate a discontent with the official constitutional, racial concept of nervous disorders expressed in recent German publications. The author expresses his point of view delicately without too great detail. Concerning the early life experiences which are not successfully solved and which remain unconscious, manifesting only the partial solution in neurotic behavior, he is reticent. Nevertheless the work is a hopeful sign indicating that dynamic psychiatry in Germany is not dead but only suppressed into latency.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts: Compensability for Disability Following Hernia and Operative Repair.—The claimant's work required him to shovel dirt and other substances from one place to another. He alleged that on May 19, 1936, while so engaged, a hernia appeared suddenly and was immediately followed by intense pain. Previous to that time, according to his claim, he had been in sound physical condition. On June 1, he filed a claim with the industrial accident board but said nothing concerning the operation to cure the hernia that he was to submit to on the following day. The claim did not reach the board until the day after the operation, but the board was notified of the operation about July 10. After a hearing on August 12, the board held that the operation had cured the hernia and awarded compensation at the rate of $7.20 a week for twenty-six weeks for temporary disability. The claimant alleged that he had been permanently and totally disabled and appealed to the district court, Wise County. After a jury trial, the court rendered judgment in his favor for $2,492.48. The employer's insurance carrier thereupon appealed to the court of civil appeals of Texas, Amarillo.

The insurance carrier contended that the operation for the repair of the hernia had been successful and that the claimant was entitled to compensation for only temporary disability, under subdivision 4, section 12 b, article 8306, Revised Civil Statutes of Texas, 1925, which authorized compensation for twenty-six weeks only, after a successful operation for hernia. Clearly, however, said the court, if the operation failed to restore the appellee to his former ability to perform labor, it would not be a successful operation such as was contemplated by the statute. It was proved by ample evidence that the operation had reduced the hernia and that the complainant had completely recovered from the operation. He claimed, however, that notwithstanding the operative cure he had "a left-over condition from the injury and operation which rendered him totally incapacitated to perform labor." The question therefore, said the court, was whether or not the operation had failed to restore the appellee to his former ability to perform labor. The statute does not require an injured employee to file his claim for anything other than a hernia, and when he has received an injury to a specific member of the body he is not confined to a recovery of the compensation specially provided for such injury if he alleges and proves other injuries, or if it is fairly shown that the injury to the specific member of the body has involved other portions of the body or affected his general health.

In the claim filed by the claimant with the industrial accident board he stated that the front of the abdomen near the left groin, the site of the injury, was swollen, that he was unable to stand on his feet without intense pain and that the injury had resulted in permanent and total disability. A physician testified that he had examined the claimant and that when the claimant walked he had to do so very carefully in order to prevent pain; that he could not straighten his body very well

nor hold himself in a straightened position; that the claimant was very much weakened; that the condition would last as long as he lived and that the claimant could not do anything. There was no evidence to show that the claimant's condition was due to anything other than the injury that he received May 19. It was proper, therefore, said the appellate court, for the trial court to submit to the jury the question as to whether the claimant had sustained any loss of capacity to work as the result of the injury.

The insurer complained that the trial court had refused to submit to the jury a special issue requested by it, asking the jury to find from a preponderance of the evidence that the claimant's disability would not be removed by physical exertion. The request for this special issue was based on the testimony of a medical witness to the effect that after an operation for hernia a patient becomes "soft" to the extent that when he goes back to work he has considerable soreness; that if the claimant would go back to work and perform physical labor for ten days or two weeks the soreness of which he complained would entirely disappear, but as long as the claimant refrained from working and exercising the muscles and tendons in the area of the operation he would experience tenderness and the muscles and tendons would be sore. The trial court refused, however, to submit that issue. The testimony of the witness, said the appellate court, was necessarily only his opinion. The jury could not have known whether exercise would or would not remove the disability. If the jury had undertaken to answer such a special issue, their answer could have been nothing more than their opinion obtained from the testimony of the surgeon as to the probability of a future event, which would not have furnished a proper basis for a judgment in a case of this kind. If the insurer desired that the jury pass on the question presented by the requested special issue, the proper course would have been for it to request an examination of the claimant, on the theory that he was persisting in injurious practices which tended to imperil or retard his recovery. If an examination had been made under such circumstances and the evidence in respect thereto had warranted, it would have been proper for the court to submit such an issue as to whether or not the appellee was persisting in such practices. The trial court, therefore, did not err in refusing to submit to the jury the special issue requested by the insurer.

The court of civil appeals accordingly confirmed the judgment in favor of the claimant, but only on condition that he consent to a reduction of the award by $100, the amount allowed as the physician's fee in the case. This reduction was based on the fact that the claimant had not submitted evidence in the course of the trial as to the reasonableness of that fee.—*Travelers Ins. Co. v. Mote (Texas), 116 S. W. (2d) 427.*

Evidence: Hypothetical Question Must Be Based on Facts in Evidence.—The testimony of a physician, said the Supreme Court of South Carolina, that in his opinion the plaintiff was totally and permanently disabled can have no probative value in the face of evidence of the physical fact that the plaintiff was able, after he was alleged to be disabled, to perform the same sort of work in which he was accustomed to engage. Further, the hypothetical question propounded to an expert witness must be framed only on facts in evidence and must not include the opinion of another expert. As is said in 22 Corpus Juris 706-9:

> The expert, properly so called, is asked what would be his judgment upon all or any prescribed part of the facts, as to which evidence has been lawfully received, or which has been admitted, assuming that they are true; provided that a sufficient number of facts are assumed to enable the witness to give an intelligent opinion. The witness having no facts in mind as the result of observation, it is in this way alone that a proper basis for a reasonable judgment can be furnished, and the witness cannot add to the hypothetical question facts within his own knowledge *and not in evidence.* The requirement that the question should be in hypothetical form, *stating fact of which there is some evidence in the case, continues* throughout the examination of the expert, . . . Different hypotheses may be submitted to the witness for different parties, *provided the facts embraced in each hypothesis have some support in the evidence.* . . . A hypothetical question which includes, with other facts, the opinion of another expert is improper.

—*Ellis v. Kansas City Life Ins. Co. (S. C.), 197 S. E. 398.*

Society Proceedings

COMING MEETINGS

American Medical Association, St. Louis, May 15-19. Dr. Olin West, 535 North Dearborn St., Chicago, Secretary.

American Academy of Tuberculosis Physicians, St. Louis, May 13-14. Dr. Arnold Minnig, 638 Metropolitan Bldg., Denver, Secretary.

American Association for the Study of Goiter, Cincinnati, May 22-24. Dr. W. Blair Mosser, 133 Biddle St., Kane, Pa., Secretary.

American Association for Traumatic Surgery, Hot Springs, Va., May 8-9. Dr. Ralph G. Carothers, 409 Broadway, Cincinnati, Secretary.

American Association of Genito-Urinary Surgeons, Williamsburg, Va., May 24-26. Dr. Charles C. Higgins, 2050 East 93d St., Cleveland, Secretary.

American Association of Industrial Physicians and Surgeons, Cleveland, June 5-8. Dr. V. S. Cheney, Armour and Company, Union Stock Yards, Chicago, Secretary.

American Bronchoscopic Society, Rye, N. Y., May 26. Dr. Lyman Richards, 319 Longwood Ave., Boston, Secretary.

American College of Chest Physicians, St. Louis, May 13-14. Dr. Robert B. Homan Jr., 109 North Oregon St., El Paso, Texas, Secretary.

American Dermatological Association, Montebello, Canada, May 31-June 3. Dr. Fred D. Weidman, University of Pennsylvania Medical Laboratories, Philadelphia, Secretary.

American Gynecological Society, White Sulphur Springs, W. Va., May 22-24. Dr. Richard W. TeLinde, 11 East Chase St., Baltimore, Secretary.

American Heart Association, St. Louis, May 12-13. Dr. Howard B. Sprague, 50 West 50th St., New York, Secretary.

American Laryngological Association, Rye, N. Y., May 24-26. Dr. James A. Babbitt, 1912 Spruce St., Philadelphia, Secretary.

American Laryngological, Rhinological and Otological Society, Chicago, May 10-11. Dr. C. Stewart Nash, 277 Alexander St., Rochester, N. Y., Secretary.

American Neurological Association, Atlantic City, N. J., June 5-7. Dr. Henry A. Riley, 117 East 72d St., New York, Secretary.

American Ophthalmological Society, Hot Springs, Va., June 5-7. Dr. Eugene M. Blake, 303 Whitney Ave., New Haven, Conn., Secretary.

American Orthopedic Association, Buffalo, N. Y., June 5-8. Dr. Ralph K. Ghormley, 110 Second Ave. S.W., Rochester, Minn., Secretary.

American Otological Society, New York, May 22-23. Dr. Thomas J. Harris, 104 East 40th St., New York, Secretary.

American Proctologic Society, Brooklyn, N. Y., June 25-27. Dr. Curtice Rosser, 710 Medical Arts Bldg., Dallas, Texas, Secretary.

American Psychiatric Association, Chicago, May 8-12. Dr. Arthur H. Ruggles, Butler Hospital, Providence, R. I., Secretary.

American Radium Society, St. Louis, May 15-16. Dr. Frederick W. O'Brien, 465 Beacon St., Boston, Secretary.

American Rheumatism Association, St. Louis, May 15. Dr. Loring T. Swaim, 372 Marlborough St., Boston, Secretary.

American Society for the Study of Allergy, St. Louis, May 15-16. Dr. J. Harvey Black, 1405 Medical Arts Bldg., Dallas, Texas, Secretary.

American Society of Clinical Pathologists, St. Louis, May 12-14. Dr. Alfred S. Giordano, 531 N. Main St., South Bend, Ind., Secretary.

American Surgical Association, Hot Springs, Va., May 11-13. Dr. Charles G. Mixter, 319 Longwood Ave., Boston, Secretary.

American Therapeutic Society, St. Louis, May 12-13. Dr. Joseph F. Elward, 1726 Eye St. N.W., Washington, D. C., Secretary.

American Urological Association, White Sulphur Springs, W. Va., May 29-June 1. Dr. Clyde L. Deming, 789 Howard Ave., New Haven, Conn., Secretary.

Arkansas Medical Society, Hot Springs National Park, May 8-10. Dr. W. R. Brooksher, 602 Garrison Ave., Fort Smith, Secretary.

Associated Anesthetists of the United States and Canada, St. Louis, May 15. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary General.

Association for the Study of Internal Secretions, St. Louis, May 13-14. Dr. E. Kost Shelton, 921 Westwood Blvd., Los Angeles, Secretary.

Association of Military Surgeons of the United States, Washington, D. C., May 8-10. Dr. H. L. Gilchrist, Army Medical Museum, Washington, D. C., Secretary.

Connecticut State Medical Society, New Haven, May 25-26. Dr. Creighton Barker, 258 Church St., New Haven, Secretary.

Massachusetts Medical Society, Worcester, June 6-8. Dr. Alexander S. Begg, 8 Fenway, Boston, Secretary.

Medical Library Association, Newark, N. J., June 27-29. Miss Janet Doe, 2 East 103d St., New York, Secretary.

Minnesota State Medical Association, Minneapolis, May 31-June 2. Dr. B. B. Souster, 11 West Summit Ave., St. Paul, Secretary.

Mississippi State Medical Association, Gulfport, May 9-11. Dr. T. M. Dye, McWilliams Bldg., Clarksdale, Secretary.

Montana, Medical Association of, Butte, June 28-30. Dr. Thomas L. Hawkins, 50 North Main St., Helena, Secretary.

National Gastroenterological Association, New York, June 1-2. Dr. G. Randolph Manning, 1819 Broadway, New York, Secretary.

National Tuberculosis Association, Boston, June 26-29. Dr. Charles J. Hatfield, 50 West 50th Street, New York, Secretary.

New Hampshire Medical Society, Manchester, June 8-9. Dr. Carleton R. Metcalf, 5 South State St., Concord, Secretary.

New Jersey, Medical Society of, Atlantic City, June 6-8. Dr. Alfred Stahl, 55 Lincoln Park, Newark, Secretary.

New Mexico Medical Society, Gallup, May 11-13. Dr. L. B. Cohenour, 219 W. Central Ave., Albuquerque, Secretary.

North Carolina, Medical Society of the State of, Cruise to Bermuda, May 9-14. Dr. T. W. M. Long, Roanoke Rapids, Secretary.

North Dakota State Medical Association, Fargo, May 8-10. Dr. Albert W. Skelsey, 20½ North Broadway, Fargo, Secretary.

Pacific Northwest Medical Association, Spokane, Wash., June 26-29. Dr. C. W. Countryman, 407 Riverside Avenue, Spokane, Wash., Secretary.

Pacific Coast Oto-Ophthalmological Society, San Francisco, June 19-22. Dr. C. Allen Dickey, 450 Sutter St., San Francisco, Secretary.

Rhode Island Medical Society, Providence, June 7-8. Dr. Guy W. Wells, 124 Waterman St., Providence, Secretary.

Society of Surgeons of New Jersey, Elizabeth, May 25. Dr. Walter B. Mount, 21 Plymouth St., Montclair, Secretary.

Texas, State Medical Association of, San Antonio, May 8-11. Dr. Holman Taylor, 1404 West El Paso St., Fort Worth, Secretary.

Vancouver Medical Association Summer School, Vancouver, B. C., June 6-9. Dr. W. W. Simpson, 203 Medical Dental Bldg., Vancouver, B. C., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1929 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Ophthalmology, St. Louis

22: 119-238 (Feb.) 1939

Histologic Study of the Eyes of Rabbits Congenitally Infected with Syphilis. H. Shiga, Tokio, Japan.—p. 119.

Late Results in Retinal Detachment Operations. D. K. Pischel, San Francisco.—p. 130.

Papillitis and Papilledema in Multiple Sclerosis. S. Sugar, Chicago.—p. 135.

Dysostosis Craniofacialis (Crouzon). A. C. Krause and D. N. Buchanan, Chicago.—p. 140.

Lectures on Motor Anomalies: VI. Principles of Surgical Treatment. A. Bielschowsky, Hanover, N. H.—p. 145.

Some Physiologic and Anatomic Aspects of the Cornea Affecting Its Pathology. T. L. Terry, Boston.—p. 153.

Monocular Protection versus Monocular Occlusion. W. H. Howard, Chicago.—p. 156.

Superficial Marginal Keratitis: Clinical and Anatomic Findings in Fellow Eyes. O. H. Ellis, St. Louis.—p. 161.

Congenital Abducens Paralysis. C. Apple, Chicago.—p. 169.

American Journal of Pathology, Boston

15: 1-154 (Jan.) 1939

Pathologic Anatomy of Experimental Thrombopenic Purpura in the Dog. L. M. Tocantins and H. L. Stewart, Philadelphia.—p. 1.

Pathologic Changes in the Heart, Skeletal Musculature and Liver in Rabbits Treated with Insulin in Shock Dosage. J. Tannenberg, Albany, N. Y.—p. 25.

Growth Processes in Cartilage and Bone Subsequent to Gonadectomy and Administration of Anterior Pituitary Extract of Cattle in Immature Male and Female Guinea Pigs. M. Silberberg and Ruth Silberberg, St. Louis.—p. 55.

*Observations on Etiology of Ulcerative Colitis: III. Distribution of Lesions and Its Possible Significance. R. Lium and J. E. Porter, Boston.—p. 73.

Polyarteritis Nodosa: Report of Case. D. R. Weir, Boston.—p. 79.

Metastasizing Fibroleiomyoma of Uterus: Report of Case and Review of Literature. P. E. Steiner, Chicago.—p. 89.

Primary Hyperparathyroidism with Extensive Renal Calcification and Secondary Hyperplasia of the Parathyroids: Report of Case. J. W. Johnson Jr., New York.—p. 111.

Tularemic Septicemia: Report of Case. P. Kimmelstiel and H. W. Caldwell, Richmond, Va.—p. 127.

Congenital Rhabdomyoma of Heart: Report of Case. J. S. Labate, New York.—p. 137.

Method for Impregnation of Perivascular Nerves on Intracerebral Blood Vessels. S. P. Humphreys, Montreal.—p. 151.

Ulcerative Colitis.—Of six cases of ulcerative colitis that came to necropsy, Lium and Porter state that the first attack of colitis occurred in two only two months before death. Four of the patients had had previous attacks and died during an acute exacerbation of the disease. Cultures of stools and agglutination reactions for dysentery organisms of five of these patients were negative. The cultures of stools for pathogenic bacteria were repeatedly negative of one but Bacillus enteritidis was recovered from the blood stream at necropsy. The disease varied in its extent; one patient showed involvement of only the rectum and sigmoid, in three the lesions extended to the splenic flexure and in one to the midportion of the transverse colon, and one showed involvement of the entire colon without extension beyond the ileocecal valve. In all instances the most severe lesions were in the rectum. At the junction of the rectum and sigmoid the ulcerations developed into three rows running in the longitudinal direction of the intestine. In places the ulcerations extended between the longitudinal rows of ulcers and when this occurred they seemed to follow a linear pattern in the circular direction of the intestine. When the fat and mesenteric attachments were dissected away from the muscular layers of the intestine it was found that the lesions lay directly over the tenial bands. This correlation was found in all six cases. The intestinal tract was unevenly involved by the disease and lesions were found in all stages of development in the same individual. The earliest gross changes observed consisted essentially of hyperemia, edema and petechial submucous hemorrhages. In certain areas in which the lesions had advanced to a later stage, superficial erosions occurred which were covered with fibrin. Other lesions were found which were interpreted as transitional stages between the earliest erosions and the frank ulcerations. Mucus in the epithelial cells was completely or almost completely absent from the early lesions. This was observed in all sections taken from the acutely involved areas and contrasted sharply with the appearance of the mucous membrane in a normal colon. The arrangement of the severest lesions in ulcerative colitis is such that they lie directly over the most powerful muscles, and there may well be a direct relation between the muscles and the lesions. The early stage of ulcerative colitis can be simulated experimentally in animals by hypermotility and spasm of the colonic muscles. Spasm and hypermotility of the intestinal muscles are a prominent clinical feature of ulcerative colitis. It seems highly probable that ulcerative colitis is primarily a disease caused by intense muscular spasm and hypermotility, and therefore the distribution of lesions follows a muscular pattern. Whatever infectious element is present may well be due to secondary involvement of the damaged areas caused by muscular overactivity.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

41: 145-304 (Feb.) 1939

Role of Autonomous Movements of Gastrointestinal Mucous Membrane in Digestion. G. Forssell, Stockholm, Sweden.—p. 145.

Cerebral Angiography by Direct Injection of the Common Carotid Artery. F. Turnbull, Vancouver, B. C.—p. 166.

Bronchiectasis, Collapsed Lung and Triangular Basal Shadow in the Roentgenogram and Their Interrelationship. W. E. Anspach, Chicago.—p. 173.

Roentgenologic Aspect of Lung Edema. Mary Werkenthin, Warsaw, Poland.—p. 183.

Some Fresh Aspects of Appendicitis: Joint Roentgenologic and Histopathologic Study. P. F. Sahyoun and A. Oppenheimer, Beirut, Lebanon, Syria.—p. 188.

*Radiotherapy in Hodgkin's Disease (Malignant Granulomatosis): Anatomic and Clinical Foundations; Governing Principles; Results. R. Gilbert, Geneva, Switzerland.—p. 198.

Results of Iliac Lymphadenectomy with Irradiation in Borderline Cancer of the Cervix. F. J. Taussig, St. Louis.—p. 242.

Hereditary Changes in Descendants of Female Mice Exposed to Roentgen Rays. G. D. Snell, Bar Harbor, Maine, and F. B. Ames, Bangor, Maine.—p. 248.

Measurement of Supervoltage X-Rays with Free-Air Ionization Chamber. L. S. Taylor, G. Singer and A. L. Charlton, Washington, D. C.—p. 256.

Progress in the Design of Rotating Anode Tubes. M. J. Gross and Z. J. Atlee, Chicago.—p. 276.

Radiotherapy in Hodgkin's Disease.—Gilbert finds that x-ray exploration of malignant granulomatosis (Hodgkin's disease or lymphogranulomatosis) offers a valuable means of orienting clinical diagnosis, of determining the site and extent of certain deep lesions, and of verifying and following their regression after treatment or their extension after recurrence. Systematic roentgen therapy is the method of choice because, by reason of the essentially lymphoid character of its lesions, malignant granulomatosis usually has an exceptional degree of radiosensitiveness. The diagnosis should rest on a biopsy whenever possible. In this systemic disease the roentgenologist giving roentgen therapy must act as a general physician. He should know its manifestations, the regions it involves, its modes of extension, its types and evolutionary caprices, its response to roentgen therapy and the reactions of the patient during treatment. The aim of treatment is to obtain as frank and as long remissions as possible, thus restoring to the patient the illusion of recovered health and complete capacity to work. This implies the destruction of all the granulomatous foci, deep and superficial, without jeopardizing the general condition of the patient or the condition of the blood. Except in special cases, roentgen therapy is more important than radium therapy because of the extent of the area to be irradiated and because of the doses to be delivered to the deepest foci. Simple, daily, fractional irradiation should be directed to each invaded region in succession or, according to the cases, directed first to regions requiring the

earliest treatment. In this way each field is irradiated only at intervals of about two days until a sufficient total dose has been given (clinical and blood examinations). Roentgen therapy should be repeated only on the recurrence of the disease. So-called maintenance or prophylactic treatment is superfluous and even detrimental. Roentgen therapy modifies the clinical aspect of the disease and retards its evolution. Its influence is the more pronounced as the disease is less malignant; its extent and the age of the patient also are deciding factors. The average duration of survival, according to different authors, has been doubled and even tripled; the same proportion is found when long term results are analyzed.

Annals of Surgery, Philadelphia

109: 321-480 (March) 1939

Some Recent Advances in Surgical Therapeusis. I. S. Ravdin, Philadelphia.—p. 321.
Surgery of the Gallbladder. B. Brooks and T. E. Wyatt, Nashville, Tenn.—p. 334.
Hepatic and Biliary Tract Disease: Review of Recent Significant Advances. F. F. Boyce, New Orleans.—p. 351.
Large, Cavernous Hemangiomas of Liver: Report of Inoperable Case Treated with Roentgenotherapy. B. S. Ray, New York.—p. 373.
*Carcinoma of Peripapillary Portion of the Duodenum. M. M. Lieber, Philadelphia; H. L. Stewart, Boston, and H. Lund, Uniontown, Pa. —p. 383.
Surgical Procedures for Carcinoma of Transverse Colon. C. W. Mayo and W. C. Simpson, Rochester, Minn.—p. 430.
Short Interval, Two Stage Thyroid Lobectomy for Hyperthyroidism. M. Taffel and S. C. Harvey, New Haven, Conn.—p. 437.
Secondary Deformities in Cleft Palate Patients. V. H. Kazanjian, Boston.—p. 442.
Perforated Wound of the Rectum into the Pouch of Douglas: Caused by Impalement. J. H. Powers and E. S. O'Meara, Cooperstown, N. Y. —p. 468.
Technic for Producing Facial Masks and Models. B. S. West, Hamilton, N. Y.—p. 474.

Carcinoma of Duodenum.—Lieber and his co-workers present a clinical and pathologic review of carcinoma of the peripapillary region of the duodenum, based on seventeen new cases and 205 cases reported in the literature. Thirteen of the authors' cases and one from the literature were found in 22,152 necropsies and three in 4,154 necropsies. The average age was about 54.4 years. Eighty-three of the patients were women and 139 were men. Only thirteen cases occurred in individuals from 15 to 34 years of age. The onset was acute in about 80 and gradual in 20 per cent of the cases. The principal symptoms and signs, irrespective of the mode of onset, were jaundice, pain, loss of weight and strength, anorexia, fever, vomiting, constipation, diarrhea and a sense of weight and pressure in the abdomen. Other less common symptoms were dyspepsia, epigastric distress, flatulence, abdominal distention, nausea and chills. Jaundice was a symptom in 98.2 per cent of the cases and pain in 59.4 per cent; both were associated at the onset of the condition in 24.3 per cent. Fever, sometimes accompanied by chills, occurred in 33.3 per cent of cases, usually late in the condition. A mass was palpable clinically in the region of the primary tumor in only four cases. The liver was palpably enlarged in 77.9 per cent of cases and the gallbladder in 49.9 per cent. A moderate grade of anemia was the rule in these patients. A correct preoperative diagnosis was made in approximately 17.1 per cent of cases. The presence of a lesion in the region of the papilla of Vater was recognized roentgenographically in sixteen of sixty cases examined. At celiotomy, a correct surgical diagnosis was made in approximately 68 per cent of 122 cases. Ninety-seven of 100 patients, treated medically and not subjected to surgery, died on an average of 6.63 months after the onset of the illness. Surgical therapy was instituted in 122 cases. There was an ultimate mortality rate of 72 per cent. The operative mortality was 50.6 per cent. Of fifty-one patients subjected only to some type of palliative procedure for the relief of obstructive jaundice, the operative mortality was 78.4 per cent. Of fifty-seven patients in whom the primary growth was resected either alone or in combination with other surgical procedures, the operative mortality was 30 per cent. The patients who died immedately after an operation were ill for an average of six months before operation. Other patients who were operated on and who survived the immediate postoperative effects lived for an average of two years after the onset of the condition, and a little more than one half of these were reported alive at the end of this period; of this group, those who died were ill for an average of seven months before operation, whereas those reported as still living were ill for an average of only two months before operation. These figures emphasize the importance of early diagnosis and early surgical treatment.

Archives of Internal Medicine, Chicago

63: 201-432 (Feb.) 1939

Etiology of Ulcerative Colitis: I. Preparation, Care and Secretions of Colonic Explants in Dogs. R. Lium and J. Porter, Boston.—p. 201.
Id.: II. Effect of Induced Muscular Spasm on Colonic Explants in Dogs, with Comment on Relation of Muscular Spasm to Ulcerative Colitis. R. Lium, Boston.—p. 210.
*Abnormalities of Calcium Metabolism. F. B. Taylor, P. Michael and L. Barnard, Oakland, Calif.—p. 226.
Renal Amyloidosis: Further Study of Clinical Course and Pathologic Lesions in Fifty-Seven Cases. H. O. Altnow, Minneapolis; Charlotte C. Van Winkle and S. S. Cohen, Oak Terrace, Minn.—p. 249.
Aspiration for Removal of Biopsy Material from the Liver: Report of Thirty-Five Cases. E. Baron, New York.—p. 276.
Relation of Cardiac Output to Congestive Heart Failure. J. McGuire, Rose Shore, V. Hauenstein and F. Goldman, Cincinnati.—p. 290.
Spontaneous Arteriovenous Aneurysms of the Thorax: Review of the Literature, with Report of Two Cases. E. L. Armstrong, C. B. Coggin and H. S. Hendrickson, Los Angeles.—p. 298.
Bundle Branch Block: Criteria of Classification, Diagnosis and Prognosis; Study of 210 Cases, with Follow-Up Data. H. A. Freund and R. Sokolov, Detroit.—p. 318.
*Gastroscopic Observations in Pernicious Anemia. R. Schindler and A. M. Serby, Chicago.—p. 334.
Diseases of Metabolism and Nutrition: Review of Certain Recent Contributions. R. M. Wilder, D. I. Rutledge, Rochester, Minn., and D. L. Wilbur, San Francisco.—p. 356.

Abnormalities of Calcium Metabolism.—Taylor and his associates point out that faulty calcium metabolism accounts for a wide range of discomforts and disabilities and in some of its forms leads to untimely death. Calcium is deservedly a central figure in mineral metabolism. Americans ingest too little calcium salt. The body does not naturally conserve calcium. If there is a shortage in the supply of calcium or if there is an increased demand for it, excretion proceeds without economy and the organism is confronted with a progressive deficiency. Oversupply of calcium is probably never a practical problem in human beings. In persons with abnormal deposits of calcium salt, the problem is one of perversion of distribution and not one of excessive intake. The authors believe that one should suspect disturbance of mineral metabolism when there is defective nutrition. A child of subnormal stature may have congenital renal insufficiency, with a fault in the excretion of phosphate, as in renal rickets. A thin woman with diarrhea may be losing calcium, to the disadvantage of the function of the soft tissues; tetany may develop. A poorly nourished person with anemia may have poor absorption of iron or of calcium from the digestive tract. The food eaten may contain too little of these elements. Unusual fractures may be due not only to primary or secondary osseous neoplasm but to poor internal economy of calcium or of phosphate. A tonic convulsive state may be due to a lowered calcium content of the serum. Convulsions may result from both uremia and low calcium values. A high calcium content may cause or predispose to an abnormally slow cardiac rate or to rapid, irregular cardiac action. These effects were seen in a patient with a high calcium content secondary to metastatic carcinoma of bone. Not all spurious deposits of calcium salt are traceable to overabundance of calcium in the blood. In calcinosis and several allied diseases the calcium and phosphate contents of the serum are normal. For some reason there are points of diminished tissue viability in these conditions. Defective local circulation may be the reason. These regions become progressively buried in calcium salt. In cases in which bone is abnormally rarefied phosphatase is often present in the serum to excess. In Paget's disease, phosphatase is present in the bone in less than normal amount. When there is a suspicion of deranged mineral metabolism, the important facts can usually be obtained at the bedside with the aid of the laboratory and x-ray facilities in a class A hospital.

Gastroscopy in Pernicious Anemia.—Schindler and Serby made gastroscopic studies of twenty-three patients with pernicious anemia; nine were seen before any treatment had been given, fourteen after adequate treatment and three before and after treatment. All untreated patients presented superficial gastritis, superficial plus atrophic gastritis or patchy or diffuse

atrophy. No definite improvement of the condition of the gastric mucosa was found in four cases after treatment, atrophy definitely progressed in one, the mucosa of the antrum was found to be normal in seven, there was almost complete regeneration in one, and all portions of the gastric mucosa became normal in four cases. These facts can be explained only by the assumption that two separate diseases of the stomach are present in pernicious anemia. Primarily there is dysfunction of the cells which produce the "antianemic" factor. Secondarily there follows degeneration of the surface epithelium, with superimposed genuine inflammation, which may or may not heal when the deficiency is eliminated. The secondary inflammation is usually combined with a similar disorder of the tongue and of the intestine, with dysfunction of the hemopoietic apparatus and combined degeneration of the spinal cord. However, the absence of the "antianemic" factor may sometimes lead to severe but reversible atrophic gastritis, without diseases of the blood. Atrophic gastritis may be due in many cases to some kind of deficiency and in some to the lack of the "antianemic" factor. This disease should be diagnosed by the use of the gastroscope. A gastroscopic check-up on the effects of therapy is necessary. The frequent incidence of mucosal polyps of the stomach in pernicious anemia has been corroborated.

Archives of Otolaryngology, Chicago

29: 199-402 (Feb.) 1939

Abscess of the Brain: Relation of Histologic to Clinical Features. B. J. Alpers, Philadelphia.—p. 199.
Differential Diagnosis of Intrinsic Carcinoma of the Larynx. V. E. Negus, London, England.—p. 223.
Actinomycosis of the Ear. O. C. Risch, New York.—p. 235.
Tissue Culture of Nasal Ciliated Epithelium. A. W. Proetz and Marian Pfingsten, St. Louis.—p. 252.
Irrigation by Posterior Suction: Its Use in Treatment of Subacute and Early Chronic Posterior Sinusitis. N. Fox, J. W. Harned and S. Peluse, Chicago.—p. 263.
Radical Mastoidectomy: Its Use in Treatment of Dangerous Types of Suppuration of the Temporal Bone. N. A. Bolotow, Providence, R. I.—p. 269.
Process of Healing in Injuries to Capsule of Labyrinth. H. B. Perlman, Chicago.—p. 287.
Acute Mastoiditis from Surgical Point of View. S. Kulkin, New York.—p. 306.
Air-Borne Droplet Infection. H. C. Rosenberger, Cleveland.—p. 314.
Bucco-Antral Fistula: Method of Closure. G. Major, Pittsburgh.—p. 319.
Roentgenologic Study of the Hypopharynx, Larynx and Trachea: Its Use in Laryngeal Diagnosis. J. E. Mulsow, Milwaukee.—p. 326.
Sulfanilamide Therapy for Acute Otitis Media and Acute Mastoiditis. D. C. Baker Jr. and G. E. Bradford, New York.—p. 334.
*Chronic Suppurative Lesions of the Petrous Pyramid: Report of Six Cases with Different Pathologic Characteristics. H. I. Lillie and H. L. Williams, Rochester, Minn.—p. 345.
Cylindroma of Upper Air Passages: Cylindromatous Type of Mixed Tumor. R. Kramer and M. L. Som, New York.—p. 356.

Suppuration of the Petrous Pyramid.—Lillie and Williams report six cases of chronic suppuration of the petrous pyramid; a presumptive diagnosis was made in five after careful consideration and integration of symptoms and signs. The diagnosis was confirmed by an operation directed primarily to the petrous pyramid. If discharge from the ear, low grade sepsis and deep retro-ocular pain, which were absent, had been insisted on as the cardinal symptoms and signs, the diagnosis would have been missed entirely. The six cases exemplify different pathologic processes, ranging through caseated abscess and meningitis to thrombosis of the cavernous sinus, meningitis and rupture into the nasopharynx. Two were cases of encapsulated chronic petrositis without apparent otitis media. While it is not comforting to think of apparently healed mastoiditis or petrositis becoming active again after a period of five or ten years, nevertheless it can do so. In certain cases in which there is an obscure clinical syndrome referable to the head, the history of aural disease may assume a place of great importance in determining the lesion causing such a syndrome. The cases presented show the futility of attemping to fit clinical material into didactic or academic pigeonholes. If exploratory operation had not been instituted before the appearance of complete symptoms and signs in the six cases, the result (five recoveries) might not have been so favorable. This group of cases demonstrates to the authors that it is necessary to approach the petrous pyramid without preconceived ideas regarding the surgical technic that will be adequate for the control of the disease encountered.

Archives of Physical Therapy, Chicago

20: 65-128 (Feb.) 1939

*Evaluation of Skin Protection Against Ultraviolet Rays. A. Bachem and B. Fantus, Chicago.—p. 69.
Investigations in Fever Therapy. F. H. Krusen and E. C. Elkins, Rochester, Minn.—p. 77.
Roentgen Therapy for Inflammatory Lesions. E. T. Leddy, Rochester, Minn.—p. 85.
*Roentgen Treatment of Gas Gangrene. J. F. Kelly and D. A. Dowell, Omaha.—p. 88.
Thermotherapy of Bright's Disease and Its Complications: Preliminary Report. G. W. Stark, Syracuse, N. Y.—p. 94.
Short Wave Epilation. D. Derow, New York.—p. 101.
Chronic Myositis of Lumbar Region: Report on Studies of Fever Therapy. H. B. Shorbe, Oklahoma City.—p. 102.
Study on Economic Aspects of Physical Therapy. R. Kovács, New York.—p. 107.

Protection of Skin Against Ultraviolet Rays.—Bachem and Fantus studied the protective properties against sunburn of several materials by spectroscopic examination and cutaneous tests. From cutaneous tests they find that tragacanth paste is worthless as a protectant against sunburn, that vanishing cream, cold cream and white petrolatum are relatively much less effective than are mixtures of yellow petrolatum and wool fat petrolatum, cream salve and diachylon ointment. The cream salve tested gave the best result. This is an emulsion produced by the addition of about 50 per cent of water to a mixture of one part of wool fat and three parts of petrolatum. Its particular value is no doubt explainable by diffusion, reflection and absorption phenomena. Of the insoluble powders studied, titanium dioxide is the most efficient in its protective value and calamine is next in order. Barium sulfate and esculin were less efficient. Of soluble substances that gave promise of being useful as sunscreens ichthammol, leukichthol, caramel, quinine oleate and menthyl salicylate were tested; 2 per cent ichthammol was about as efficient as 4 per cent caramel (sugar coloring) or 5 per cent menthyl salicylate. Quinine oleate was not found to be as efficient as ichthammol and the other substances. As a sunburn protectant is applied to surfaces of the skin exposed to view, cosmetic quality of the preparation is essential. The authors therefore decided to take advantage of the "cuticolor preparations" developed by Fantus and Dyniewicz. "Cuticolor titanium dioxide" is made with titanium dioxide, which has been found to be the most efficient of the powders tested. To give this white powder a skin color, red ferric oxide (6 per cent) and yellow ferric oxide (8 per cent) are added. Rose water is employed to give it a pleasant odor. Such volatile oils as bergamot, lime, lemon, orange and cologne have photosensitizing qualities and should be avoided in sunscreens. The comparison of cuticolor ointment with various proprietary preparations on the market recommended for protection against sunburn shows that "cuticolor ointment" is superior to any of them and a test exposure of an individual to actual sunburn shows that cuticolor ointment is indeed efficient in a practical test. Formulas for six sunscreen preparations are listed any one of which, the authors say, has been found superior to a number of proprietary sun protectants on the market.

Roentgen Treatment of Gas Gangrene.—Kelly and Dowell believe that early and frequent treatment with small doses of roentgen radiation is the answer to the prevention or treatment of infections with gas forming organisms. They sent out questionnaires to about 100 physicians scattered throughout the United States and Canada from whom they obtained data on 143 cases (including their own). From the results obtained in these cases as compared with past experiences the authors are positive that x-radiation will lower mortality and lessen the necessity for amputation. The mortality rate alone is no longer a gage of successful treatment of gas gangrene and they suggest that in the future the number of amputations as well as the deaths be included in reports concerning methods of treatment in this group of infections. An analysis of the cases reveals that only the severely affected patients will die in spite of x-radiation. Accordingly, treated properly no patient should die of pure gas gangrene but rather from other causes. When it is considered that it is the severely injured, senile or debilitated patients in whom gas gangrene develops, it is realized that the primary disease, without the complication of gas gangrene, presents a variety of handicaps which in themselves will cause death in from 3 to 7 per cent of all cases. The unfortunate

individual in whom gas gangrene develops after a hypodermic injection is an exception to the seriously injured or senile patient. Unexplained pain, swelling or fever following the injection calls for an x-ray examination to establish the presence of gas, in which case roentgen treatment is imperative.

Bulletin of Neurol. Inst. of New York, New York

7: 211-336 (Dec.) 1938

Cerebral Activity Including Conscious Sensation as a Physicochemical Process with Evidence to Indicate That Many Vital Processes Can Be Expressed in Simple Mathematical Relationships: The Charles K. Mills Memorial Lecture. C. A. Elsberg, New York.—p. 212.

Aspect of the Physiology of Intellect, Illustrated by Jacksonian Seizures. R. M. Brickner, New York.—p. 245.

Mental Disorders in Association with Epileptic Seizures in Two Patients with Tumor of the Brain. L. M. Davidoff, Brooklyn.—p. 260.

Granulomatous Encephalomyelitis Due to a Protozoan (Toxoplasma or Encephalitozoon): II. Identification of a Case from Literature. A. Wolf and D. Cowen, New York.—p. 266.

Transitory Neurologic Changes During Hyperthermia. R. T. Collins, New York.—p. 291.

Cerebrospinal Fluid Potassium in Neurologic Disorders. W. M. Honeyman and R. L. Zwemer, New York.—p. 297.

Occurrence of Dissociated Disturbances of Pallesthesia and Kinesthesia. R. W. Laidlaw, Mary Alice Hamilton and R. M. Brickner, New York.—p. 303.

Apraxia and Aphasia. S. Brock, New York.—p. 321.

Nocturnal Epilepsy in Patients with Brain Tumor. J. D. Spillane, New York.—p. 328.

Indiana State Medical Assn. Journal, Indianapolis

32: 51-100 (Feb.) 1939

The Present Status of Venereal Disease Control. R. A. Vonderlehr, Washington, D. C.—p. 51.

Public Health Aspects of Venereal Diseases. W. C. Kelly, Indianapolis.—p. 54.

Laboratory Diagnosis of Syphilis. W. Dodds, Crawfordsville.—p. 57.

The Health Department in Syphilis Control. M. Miller, Evansville.—p. 59.

Treatment of Latent Syphilis. F. R. N. Carter, South Bend.—p. 60.

Neurosyphilis. C. L. Williams, Logansport.—p. 62.

Serodiagnosis of Syphilis. L. Y. Mazzini, Indianapolis.—p. 65.

Treatment and Management of Gonorrhea. W. W. Hewins, Evansville.—p. 69.

Recent Advances in Medicine That Are of Special Significance in Pediatrics. H. F. Helmholz, Rochester, Minn.—p. 71.

Nupercaine Combinations Used in Spinal Anesthesia: Eight Year Review. F. W. Ratcliff, Lafayette.—p. 74.

Hygiene of Infancy and Childhood. Indiana Pediatric Society.—p. 78.

Journal of Experimental Medicine, New York

69: 179-326 (Feb.) 1939

Study of Rickettsiae Grown on Agar Tissue Cultures. H. Zinsser, Florence FitzPatrick and H. Wei, Boston.—p. 179.

Specificity of Keratins. L. Pillemer, E. E. Ecker and J. R. Wells, Cleveland.—p. 191.

Growth of Fowl Coryza Bodies in Tissue Culture and in Blood Agar. J. B. Nelson, Princeton, N. J.—p. 199.

Differences in Immunization and Sensitization in Rabbits Injected with Relatively Avirulent or Highly Virulent Cultures of the Same Strain (H) of Hemolytic Streptococcus. D. M. Angevine, New York.—p. 211.

Relationship of Infecting Dosage, Leukocytic Response, Bacteremia and Extent of Pulmonary Involvement to the Outcome of Experimental Lobar Pneumonia in the Dog. O. H. Robertson and J. P. Fox, Chicago.—p. 229.

Physiologic Conditions Existing in Connective Tissue: I. Method of Interstitial Spread of Vital Dyes. P. D. McMaster and R. J. Parsons, New York.—p. 247.

Id.: II. The State of the Fluid in Intradermal Tissue. P. D. McMaster and R. J. Parsons, New York.—p. 265.

*Quantitative Relationships Between Immunizing Dose of Epidemic Influenza Virus and Resultant Immunity. T. Francis Jr., New York.—p. 283.

Hereditary Brachydactylia and Allied Abnormalities in Rabbit. H. S. N. Greene and J. A. Saxton Jr., Princeton, N. J.—p. 301.

Hemoglobin Production in Anemia Limited by Low Protein Intake: Influence of Iron Intake, Protein Supplements and Fasting. P. F. Hahn and G. H. Whipple, Rochester, N. Y.—p. 315.

Relation of Immunizing Dose of Influenza Virus and Immunity.—Francis finds that a direct proportion exists between the concentration of epidemic influenza virus used for intraperitoneal immunization of mice and the degree of immunity to intranasal infection which develops. Mice vaccinated with virus of a given strength resist infection with virus of the same concentration but not more. The fact that there exists a limiting threshold for the degree of immunity which a certain strength of virus will induce indicates that the virus does not multiply after intraperitoneal inoculations. In ferrets a state of partial immunity is induced as a result of subcutaneous vaccination with active influenza virus. Vaccination with doses containing 100 or more intranasal infectious units is required for the production of circulating antibodies. Intranasal inoculation with one infectious unit results in a firm, immediate immunity, although the duration of immunity may bear a relation to the severity of the original infection and consequently to the size of the infecting dose. Ferrets in a state of partial immunity resulting from subcutaneous vaccination or from infection respond to intranasal inoculation of influenza virus with an accelerated production of neutralizing antibodies. The antibody titer under these conditions reaches a much higher level than occurs following a primary infection. Fully immune animals show no further antibody response to a second inoculation.

Journal of Lab. and Clinical Medicine, St. Louis

24: 449-558 (Feb.) 1939

Perforated Peptic Ulcer: Its Differentiation from Acute Pancreatitis by Blood Diastase Determination. J. G. Probstein, P. A. Wheeler and S. H. Gray, St. Louis.—p. 449.

*Use of Urethane in Symptomatic Treatment of Bronchial Asthma. L. Farmer, New York.—p. 453.

Coexistence of Diabetes Mellitus and Diabetes Insipidus: Report of Case with Pregnancy. J. A. Greene and R. B. Gibson, Iowa City.—p. 455.

Effect of Simultaneous Multiple Injections of Insulin on Blood Sugar. E. Tolstoi and Janeth Ravner, New York.—p. 458.

Comparative Study of Mediums Employed in Isolation of Typhoid Bacilli from Feces and Urines. Cora B. Gunther and L. Tuft, Philadelphia.—p. 461.

Effect of Lymphocytes in Vitro on Bacterial Toxins. H. D. Moor and Norsuda M. Newport, Oklahoma City.—p. 471.

Takata-Ara Reaction in Amyloidosis. A. Taran and S. Lipstein, Staten Island, N. Y.—p. 479.

*Some Effects Produced in the Normal Stomach by the Ingestion of Moderate and Massive Quantities of Aluminum Hydroxide Gel. J. P. Quigley, I. H. Einsel and I. Meschan, Cleveland.—p. 485.

*Torula Infection of the Central Nervous System: Report of Three Cases. R. G. Magruder, Charlottesville, Va.—p. 495.

Note on Stability of Picrotoxin Solutions. Phoebe J. Crittenden, Washington, D. C.—p. 500.

Hemoglobin Content of Human Blood. V. C. Myers and Helen M. Eddy, Cleveland.—p. 502.

Combined Diphtheria Toxoid and Tetanus Toxoid, Alum Precipitated: Prolongation of Accelerated Immunity Following Stimulating Dose of Antigen. F. G. Jones and J. M. Moss, Indianapolis.—p. 512.

Preparation of Liver Mediums. D. E. Hasley and H. Schalter, Detroit.—p. 523.

Photo-Electric Colorimetry: III. Quantitative Determination of Blood Glucose, Blood Cholesterol, Serum Phosphorus, Plasma Proteins and Urine Sugar. J. E. Andes and D. Northup, Morgantown, W. Va.—p. 529.

Routine Use of Concentration and Culture Methods for Detection of Tubercle Bacilli in Microscopically Negative Sputums and Other Body Fluids. Elizabeth Petran and C. A. Perry, Baltimore.—p. 539.

Standard for Comparing the Vital Capacity of Subjects of Different Size and a Chart for Practical Use. D. J. Edwards and May G. Wilson, New York.—p. 543.

Determination of Amino Acid Nitrogen in Blood and Urine: Rapid Colorimetric Method. M. Sahyun, with technical assistance of M. Goodell, Detroit.—p. 548.

Ethyl Carbamate in Treatment of Asthma.—During the last eighteen months Farmer has used ethyl carbamate as an antispasmodic in thirty cases of bronchial asthma. It was administered orally to adults in doses of from 1 to 2 Gm. (dissolved in water). Not more than 4 Gm. was given in any one day or for longer than four or five consecutive days. No untoward effects were observed. In fourteen of the thirty cases the alleviating action, which sets in after from fifteen to thirty minutes and lasts several hours, was most satisfactory.

Effects on Normal Stomach of Aluminum Hydroxide Gel.—According to Quigley and his associates, the administration of aluminum hydroxide gel in massive doses (120 cc. daily) for seventy-nine days to normal dogs was without significant effect on the gastric evacuation time or the histologic structure of the gastric tissue, and it only transiently reduced the gastric secretory response of free acid to histamine. Balloon records showed that quantities of aluminum hydroxide within the clinical range failed to produce a significant change in the motility or the tone of the stomach or pyloric antrum. These records were made while the medication was being introduced into the stomach or duodenum. It is believed that the therapeutic action of aluminum hydroxide depends largely on its buffering action on gastric acid and on significant modifications in gastric evacuation and secretory activity seen in the presence of ulcer or other pathologic changes but not in the normal intestine.

Torula Infection of the Central Nervous System.—Since October 1935 Magruder has observed three instances of torula involvement of the central nervous system. Case 1, on admission, presented a clinical picture resembling intracranial tumor. After careful neurologic, laboratory and x-ray studies the diagnosis was unsuspectingly made by culturing the yeastlike organism from the spinal fluid. The organism was believed to be a contaminant and the evidence was discarded. As a result, not until craniotomy had been done was the correct pathologic process determined. Case 2 was that of torulosis in a patient with diabetes mellitus and lymphatic leukemia. The diagnosis was made by the unsuspected finding of yeastlike budding organisms, on microscopic examination, in the spinal fluid. These were identified by further laboratory procedures as Torula histolytica. In the third case the torula infection (the organism was isolated in the spinal fluid) of the central nervous system was of one year's duration. The patient is still doing her daily housework with little inconvenience from the infection. The average length (Levine) of the disease is five or six months. The longest case on record is that of a patient who lived five and one half years. The total of such cases now reported in the literature is sixty-six. Torula infestation of the central nervous system may resemble tuberculous meningitis, encephalitis, cerebral tumor and sometimes abscess of the brain, dementia psychosis and dementia paralytica.

Journal of Nervous and Mental Disease, New York

89: 273-404 (March) 1939

Biochemical Changes Occurring in the Cerebral Blood During the Insulin Treatment of Schizophrenia. H. E. Himwich, Albany, N. Y.; K. M. Bowman, J. Wortis, New York, and J. F. Fazekas.—p. 273.

Nucleus of the Oculomotor Nerve, with Special Reference to Innervation of the Pupil and Fibers from the Pretectal Region. J. W. Benjamin, Evanston, Ill.—p. 294.

Physicochemistry of the Cerebrospinal Fluid: I. Conductivity and Interferometry. Mona Spiegel-Adolf, Philadelphia.—p. 311.

Autonomic Functions of the Cerebral Cortex. R. L. Crouch and J. K. Thompson, Columbia, Mo.—p. 328.

Syndrome of Vestibular Paralysis in Man. P. M. Levin, Dallas, Texas.—p. 335.

Journal of Nutrition, Philadelphia

17: 103-198 (Feb.) 1939

*Quantitative Study, by Means of Spectrographic Analysis, of Zinc in Nutrition. Florence I. Scoular, Denton, Texas.—p. 103.

Rat Acrodynia and the Essential Fatty Acids. F. W. Quackenbush, Blanche Riising Platz and H. Steenbock, Madison, Wis.—p. 115.

Studies of Fat-Free Diets. G. J. Martin, Winona, Minn.—p. 127.

Concentration of Vitamin B_1 in Tissues of the Rat. A. S. Schultz, R. F. Light, L. J. Cracas and L. Atkin, New York.—p. 143.

Hair Growth in Young Albino Rats in Relation to Body Size and Quantity of Food. E. O. Butcher, Clinton, N. Y.—p. 151.

Long-Time Study of Nitrogen, Calcium and Phosphorus Metabolism on a Low Protein Diet. Bernice L. Kunerth and Martha S. Pittman, Manhattan, Kan.—p. 161.

Long-Time Study of Nitrogen, Calcium and Phosphorus Metabolism on a Medium Protein Diet. Martha S. Pittman and Bernice L. Kunerth, Manhattan, Kan.—p. 175.

Study of Breed and Seasonal Variations in the Ascorbic Acid Content of Certified Milk from Guernseys and Holsteins. A. D. Holmes, F. Tripp, E. A. Woelffer, Boston, and G. H. Satterfield, Raleigh, N. C.—p. 187.

Quantitative Study of Zinc in Nutrition.—Scoular performed thirty-five zinc balance studies, for which she used three normal boys of preschool age. The ashed food, feces, urine, distilled water and acid alcohol were analyzed spectrographically for zinc by comparing their spectrums with those produced by solutions of known concentration. The zinc values for food which were analyzed by quantitative spectrographic technic were found to be almost 40 per cent lower than the theoretical values estimated from published analyses for which the turbidimetric method has been used. From 0.04 to 6 per cent of the ingested zinc was eliminated through the urine. The rest of the excreted zinc, representing from 42 to 164 per cent of the ingested amount, was eliminated through the alimentary tract. Since more than two thirds of the thirty-five balance studies gave retentions which were significantly greater than the error determined for the method used, it would seem that zinc is associated with physiologic functioning. On the basis of the limited ingestion range studied it is tentatively concluded that 0.307 mg. of zinc per kilogram of body weight will supply the zinc needs of the preschool child.

Journal of Pharmacology & Exper. Therap., Baltimore

65: 129-226 (Feb.) 1939

Local Anesthetic Properties of Certain Heterocyclic Compounds. G. A. Levvy and H. B. Nisbet, Edinburgh, Scotland.—p. 129.

Studies of Cyclopropane: V. Effect of Morphine, Barbital and Amytal on Concentration of Cyclopropane in Blood Required for Anesthesia and Respiratory Arrest. B. H. Robbins, J. H. Baxter Jr., and O. G. Fitzhugh, Nashville, Tenn.—p. 136.

Influence of Certain Metals on the Stability of Insulin. M. Sahyun, A. Nixon and M. Goodell, Detroit.—p. 143.

Vasoconstrictor Action of Cocaine. W. H. Crosby, Philadelphia.—p. 150.

*Chronic Oral Administration of Atabrine. S. J. Martin, B. Cominole and B. B. Clark, Albany, N. Y.—p. 156.

Effect of Atabrine on Liver and Kidney Function. B. B. Clark, B. Cominole and S. J. Martin, Albany, N. Y.—p. 166.

Effect of Thiobismol on Therapeutic Malaria. W. F. Schwartz, Cleveland.—p. 175.

Effect of Anesthesia on Vasomotor Reversal. R. P. Herwick, C. R. Linegar and T. Koppanyi, Washington, D. C.—p. 185.

Studies on Synergism and Antagonism of Drugs: III. Further Studies on Action of Nicotine and Physostigmine on Sympathetic Ganglions. C. R. Linegar, R. P. Herwick and T. Koppanyi, Washington, D. C.—p. 191.

Metabolic Fate of N-Methylbarbituric Acids. T. C. Butler and M. T. Bush, Nashville, Tenn.—p. 205.

Distribution of Administered Bromide in Comparison with Chloride and Its Relation to Body Fluids. G. B. Wallace and B. B. Brodie, with assistance of M. M. Friedman and D. Brand, New York.—p. 214.

Distribution of Iodide, Thiocyanate, Bromide and Chloride in Central Nervous System and Spinal Fluid. G. B. Wallace and B. B. Brodie, with assistance of M. M. Friedman and D. Brand, New York.—p. 220.

Chronic Oral Administration of Atabrine.—Since daily medication is the rule in malarial prophylaxis, Martin and his colleagues made an attempt to determine the survival period, symptomatology, and the gross and microscopic changes in healthy rabbits, cats and dogs following repeated daily oral feeding of from 17 to 80 per cent of the minimal lethal dose of atabrine. These doses caused death in from nineteen to three days, respectively. The effects of such medication were chiefly gastrointestinal intolerance, disturbances of the central nervous system, progressively increased weight loss associated with anorexia and body weakness, and a yellowish discoloration of the skin, sclera and mucosa of the gastrointestinal tract. Animals receiving from 2 to 3 per cent of their oral minimal lethal dose of atabrine remained in good condition for from six to seven weeks and showed no symptoms except a slight loss in body weight. Gross and microscopic studies of animals examined post mortem revealed certain pathologic changes, but none were specifically characteristic of atabrine toxicity.

Journal of Thoracic Surgery, St. Louis

8: 239-350 (Feb.) 1939

Heart Wounds: Report of Seventeen Patients Operated on in the Medical College of Virginia Hospitals and Discussion of Treatment and Prognosis. I. A. Bigger, Richmond, Va.—p. 239.

Two-Stage Operation for Total Pneumonectomy in Treatment of Carcinoma of the Lung, Demonstrating New Technic for Closure of the Bronchus. W. F. Rienhoff Jr., Baltimore.—p. 254.

Hemidiaphragmatic Paralysis in Treatment of Pulmonary Tuberculosis. J. H. Forsee, St. Louis.—p. 272.

Effect of Pneumothorax on Rate of Pleural Absorption of Fluids: Experimental Study. H. C. Maier, New York.—p. 283.

Anesthesia for Intrathoracic Operations. H. H. Bradshaw, Philadelphia.—p. 293.

Practical Points in Lobectomy. I. A. Sarot, New York.—p. 300.

Mediastinal Teratomas: Report of Unusual Case. W. T. Doran and C. W. Lester, New York.—p. 309.

*Tuberculous Lesion of Lung Eliminated by Suppurative Putrid Infection, with Recovery. S. Berg and R. H. Dieffenbach, Newark, N. J.—p. 316.

Clinical and Roentgenologic Features of Pulmonary Abscess Located in the Superior Division of the Lower Lobes. D. W. Myers and B. Blades, St. Louis.—p. 321.

Mediastinal Emphysema as Complication of Artificial Pneumoperitoneum. A. L. Banyai and G. H. Jurgens, Wauwatosa, Wis.—p. 329.

Instillation of Opaque Oil into the Bronchus by Way of a Catheter Passed Through a Naris into the Trachea. H. B. Hunt and J. D. Bisgard, Omaha.—p. 334.

Unusual Complication Occurring During Thoracoplasty. A. R. Judd, Glen Gardner, N. J.—p. 340.

Thoracoplasty Brace. J. D. Steele Jr., Milwaukee.—p. 342.

Recovery Following Gangrene of Lung.—Berg and Dieffenbach state that acute pulmonary gangrene developed in a patient with a subclavicular cavity of several months' duration. This cavity was diagnosed tuberculous by the presence of certain symptoms and the absence of others, and by the presence of acid-fast organisms in the sputum on several occasions. The gan-

grene that developed consequently was extensive enough to involve the tuberculous area in its entirety. Complete recovery followed surgical drainage and thoracoplasty. This case differs from all other reported cases of the two conditions occurring simultaneously only in its favorable outcome. It is reported for the purpose of calling attention to the fact that if gangrene develops in other patients with tuberculous lesions accompanied by a low Gaffky sputum count the prognosis need not be considered hopeless. Modern surgical intervention permits some expectation of complete recovery.

Journal of Urology, Baltimore

41: 103-264 (Feb.) 1939

Hemorrhagic Cysts of the Kidney: Report of Case. A. J. Scholl, Los Angeles.—p. 103.
Physiology of the Kidney from Clinical Standpoint. D. R. Drury, Los Angeles.—p. 111.
*Nephrobronchial Fistula: Reports of Two Cases. H. P. Lee, Spokane, Wash.—p. 117.
Treatment of Chronic Renal Insufficiency. T. Addis, San Francisco.—p. 126.
Ureterectomy: Its Indications as an Adjunct to Nephrectomy. D. P. Fagerstrom, San Jose, Calif.—p. 137.
Unusual Case of Membranous Inflammation of Ureteral Stump with Spontaneous Rupture. B. H. Hager and E. O. Boetticher, Los Angeles.—p. 151.
Endometriosis of Bladder. L. R. Reynolds, San Francisco.—p. 157.
Value of Gradual Decompression and Preliminary Drainage in Bladder Neck Surgery. J. R. Dillon, San Francisco.—p. 164.
Benign Bladder Tumor in a Two Year, Nine Month Old Child. G. R. Ridlon, Seattle.—p. 173.
Pyelograms in Triplicate; Advantages of the Method. T. D. Moore, Memphis, Tenn.—p. 177.
Bony Walled Cyst and Interstitial Cell Tumor of Epididymis, Calculous Pyohydronephrosis and Xanthoma of Abdominal Wall: Case Report: Preliminary Report of Spectrographic Analysis of Urinary Calculi. C. P. Mathé, San Francisco.—p. 188.
Chemistry and Biologic Significance of Male Sex Hormones. F. C. Koch.—p. 199.
*Precocious Hypertrophy of Prostate Following Persistent Treatment with Gonadotropic Hormone. T. O. Powell, Los Angeles.—p. 206.
Male Sex Hormone Therapy. R. V. Day, Los Angeles.—p. 210.
Ureteral Duplication with Extravesical Opening. S. W. Mulholland, Philadelphia.—p. 220.
Suprapubic Cystostomy by an Endoscopic Technic. L. D. Keyser, Roanoke, Va.—p. 228.
Concurrently Performed Cystoscopy and Intravenous Urography. L. F. Huffman, Cleveland.—p. 234.
Pathogenicity of Cocci Isolated from Urine. M. Goldstein, Rochester, Minn.—p. 237.
New Operation for Relief of Incontinence of Urine and Feces: Preliminary Report. O. S. Lowsley and R. W. Hunt, New York.—p. 252.

Nephrobronchial Fistula.—Fistula secondary to inflammatory processes in and about the kidney may occur at any point adjacent to the renal area, but bronchial fistula is apparently rare. Lee points out that bronchial fistula should be suspected in those cases in which the patient gives a history suggesting a pathologic process in the kidney or perinephric abscess, accompanied or followed by pulmonary symptoms, severe cough and profuse sputum. Some degree of pulmonary involvement probably accompanies many perinephric abscesses, but the sudden onset of severe cough and profuse purulent sputum is a particularly significant symptom of bronchial involvement. Additional evidence suggesting perinephric abscess is rales or dulness in the overlying base of the lung and elevation of the diaphragm with an overlying inflammatory process in the lung. Drainage of the perinephric abscess usually results in immediate and marked relief of the cough and sputum, with a more gradual but usually complete clearing up of the pulmonary involvement. When the kidney is markedly involved, nephrectomy may be necessary later.

Precocious Hypertrophy of Prostate.—Powell reports a case of hypertrophy of the prostate in a boy of 17 years following treatment of undescended testes with gonadotropic substance. The return of the prostate to the near normal condition after treatment was discontinued in this case offers further proof of the causal relationship between the proved hypertrophy and the glandular therapy. The author warns that caution should be exercised by the physician in treating a young man past puberty with gonadotropic substance. It is his opinion that any patient receiving such treatment should be watched carefully and that treatment should be discontinued on the occurrence of the first symptoms indicating an abnormal stimulation of the secondary sex organs.

Kansas Medical Society Journal, Topeka

40: 45-88 (Feb.) 1939

Congenital Hypertrophic Pyloric Stenosis. R. C. Fredeen, T. G. Orr and F. C. Neff, Kansas City.—p. 45.
Spinal Cord Compression Injuries: Broken Necks and Broken Backs with Spinal Cord and Spinal Nerve Injury. R. M. Stuck, Denver.—p. 48.
Anemias. W. W. Weltmer, Beloit.—p. 52.
Regional Ileitis. O. W. Longwood, Stafford.—p. 54.
Intestinal Obstruction, General Considerations and Results of Low Intestinal Intubation. J. B. Fisher, Wichita.—p. 57.
Acute Uremia: Case Report. R. S. Casford, Kansas City, Mo.—p. 64.
Scarlet Fever Immunization. C. B. Summers, Kansas City, Mo.—p. 65.

Kentucky Medical Journal, Bowling Green

37: 43-88 (Feb.) 1939

The Proper Pelvic Examination. H. J. Davis, Owensboro.—p. 43.
The State Hospital Program. J. G. Wilson, Frankfort.—p. 50.
The Prophylaxis and Treatment of Tetanus. W. T. Maxson, Lexington.—p. 55.
Cholecystitis: Indications for Operation. D. C. Elkin, Atlanta, Ga.—p. 60.
Backache. D. E. Jones, Louisville.—p. 64.
Habit Training and Habit Disorders. J. W. Bruce, Louisville.—p. 70.
Is Delay Justifiable in the Surgery of Acute Cholecystitis? A. E. Grimes and F. M. Massie, Lexington.—p. 73.
Hoarseness and Cough. M. G. Buckles, Louisville.—p. 76.

Medical Annals of District of Columbia, Washington

8: 31-64 (Feb.) 1939

*Observations on Use of Chaulmoogra Oil in Arthritis. C. Stanley, Washington.—p. 31.
Avitaminoses as Observed in Private Work. M. W. Perry and A. B. Chinn, Washington.—p. 39.
The Problem of Chronic Alcoholism and Its Treatment. R. V. Seliger, Baltimore.—p. 44.
Measurement of Velocity of Blood Flow from the Arm to Lung by Use of Paraldehyde (Preliminary Report). B. Manchester, Washington.—p. 49.
Some Bacteriologic Aspects of Colitis. A. F. Kreglow, Washington.—p. 53.

Chaulmoogra Oil in Arthritis.—Stanley presents the results that he obtained with chaulmoogra oil in the treatment of fifty patients suffering from the atrophic, hypertrophic or mixed forms of arthritis. He acknowledges that the treatment is purely empirical but states that much relief of symptoms ensues. As a rule, the highest percentages of improvement were attained in the acute and subacute forms of the disease. The more general classification of cases was used. Two major hypotheses are proposed in an endeavor to account for the efficacy of chaulmoogra oil in arthritis: (1) its bactericidal potency and (2) its influence on the retention of calcium. While the use of chaulmoogra oil in arthritis is empirical, the uniformly favorable experience which has attended its employment by the author and others appears to warrant its continued trial as a therapeutic agent.

Medicine, Baltimore

18: 1-128 (Feb.) 1939

Glycogen Disease. S. Van Creveld, Amsterdam, Netherlands.—p. 1.

Michigan State Medical Society Journal, Lansing

38: 89-184 (Feb.) 1939

Fractures Involving the Elbow. K. Speed, Chicago.—p. 105.
Postoperative Oxygen Therapy. E. R. Schmidt, Madison, Wis.—p. 109.
Obligations of the Medical Profession in Relation to Mental Health. F. G. Ebaugh, Denver.—p. 113.
*Fever of Undetermined Etiology. D. S. Smith, Pontiac.—p. 125.
*Further Observations on Distribution and Concentration of Sulfanilamide in Tissues of the Body After Enteral and Parenteral Administration. J. J. Engelfried, Ann Arbor.—p. 129.
Treatment of Burns. S. J. Seeger, Milwaukee.—p. 133.

Fever of Undetermined Etiology.—Smith presents a review of patients discharged from the University Hospital during the last ten years in whom the final diagnosis was fever of unexplained etiology. Patients with fever of less than one month, those whose fever subsided during observation although not diagnosed, postoperative cases with fever and children less than 14 years of age were excluded from the study. After these restrictions were adhered to there remained seventy-five cases. Satisfactory follow-up information was obtained in fifty-one cases, some by reexamination, some by information from the local physician and some by questionnaire. Fever of unexplained origin occurred in four classes of patients: (1) those with acute or subacute infection, type and location not determined (thir-

teen), (2) those with neoplasms, origin not apparent (nine), (3) those with rheumatic infections (seven) and (4) those whose fever may possibly be psychogenic in origin (twenty-two). In the first group of cases fever of more than 101 F., leukocytosis or secondary anemia in the majority of them and an elevated sedimentation rate were found. These cases defy diagnosis, yet the diagnosis of sepsis would seem to be in order. The erythrocyte sedimentation rate has been found to be a rather accurate index of tissue destruction either in neoplasm (second group) or in infection. In the third group of cases one year elapsed before a diagnosis of arthritis was made. The probability is suggested that the rheumatic state was the cause of the fever from the beginning. Rheumatic heart disease occurs in many people who have never had arthritis. Also many persons with clinical rheumatic fever recover and evidence of a valve lesion never develops in them. However, it seems certain that some patients with undiagnosed fever in whom arthritis or a valve lesion never develops have rheumatic infection; how many must remain a matter of speculation until the etiology of rheumatic infection is positively determined and laboratory diagnosis in the active stage becomes possible. In the twenty-two cases of the fourth group there was no objective evidence of a pathologic condition at the time of observation and none has subsequently developed over periods varying from one to ten years. In this group every apparently indicated study was carried out with the exception of the brucellin cutaneous test and the sedimentation rate, which was not done in some earlier cases. Most of the patients in this group were seen by a psychiatrist, who diagnosed psychoneurosis in the majority of them. Fever continued in all except one case. In this case the comparatively short period of fever before and after observation, five months and two months respectively, suggests the probability of an organic cause, of which the sedimentation rate might have given evidence. The duration of fever before the author's observation in these cases (average 3.8 years) and its length in the follow-up (average three years) would seem to be sufficient time for any organic cause to become evident or for fever due to most causes to subside. The author is inclined to agree with those who believe that fever can be of psychogenic origin and to classify these cases under this diagnosis. The recognition of psychogenic fever is exceedingly difficult and such a diagnosis should be considered only after a prolonged and thorough period of observation. The sedimentation rate is a valuable diagnostic procedure in differentiating infectious fevers from questionable psychogenic ones.

Distribution of Sulfanilamide in Tissues.—Engelfried states that free and conjugated sulfanilamide may be recovered from all organs, tissues and fluids of the rabbit, guinea pig and man. There is a high percentage of conjugated sulfanilamide in the liver of normal rabbits. This percentage found in blood and various tissues of the animals varies with the individual animal. Sulfanilamide is eliminated from the body in the urine as free and conjugated sulfanilamide. However, a small percentage may be excreted in the stool. The complete elimination of the drug from the body will require several days, depending on the amount of drug stored in the tissue and the daily urinary output. The quantity of sulfanilamide recovered from the tissues and fluids of two normal adult rabbits four hours after the intraperitoneal injection of the drug was 78 and 81.2 per cent. Under the same conditions, 88.5 and 96.4 per cent was recovered from two normal adult guinea pigs.

Military Surgeon, Washington, D. C.

84: 193-288 (March) 1939

The Problem of Cancer, with Special Reference to Heredity. W. S. Bainbridge.—p. 193.
Aortic Aneurysm and the Antiquity of Syphilis. R. C. Holcomb.—p. 199.
Treatment of Wounds in the Spanish War. S. Pérez-Vázquez, A. Roquero, L. G. Urgoiti and M. Díaz-Serrano.—p. 203.
Medical Department Lessons from the Fourth Army Maneuvers, 1937. D. C. Hilton.—p. 206.
Résumé of the Proceedings of the Medicomilitary Inactive Status Training Unit, Oct. 2-16, 1938: The Mayo Foundation, Rochester, Minn. F. L. Smith.—p. 228.
Clinical Photography in the United States Army. R. P. Creer.—p. 232.
Some Observations on Hydrochloric Acid. H. Pleasants Jr.—p. 235.
Asepsis and Antisepsis: Its Significance in Operating Room Management. B. A. Goodman.—p. 246.
Equine Encephalomyelitis. C. F. Schlotthauer.—p. 252.

New England Journal of Medicine, Boston

220: 175-220 (Feb. 2) 1939

Protean Character of Leukemias and of Leukemoid States. H. Jackson Jr., Boston.—p. 175.
*Hyperhidrosis of Nervous Origin and Its Treatment by Sympathectomy. J. C. White, Boston.—p. 181.
Tularemia: Report of Case of Typhoidal Form. T. L. Badger, Boston.—p. 187.
Neoplasms of the Testis: Study of Results of Orchidectomy, With and Without Irradiation. H. Cabot and J. Berkson, Rochester, Minn.—p. 192.
Survey of Alcoholic Patients Admitted to the Boston Psychopathic Hospital in 1937. J. B. Dynes, Boston.—p. 195.
Medical Aspects of Obstetrics. T. R. Goethals, Boston.—p. 198.

Hyperhidrosis of Nervous Origin and Sympathectomy.—White believes that sympathetic denervation of the arm and leg offers a safe and certain cure for hyperhidrosis. The operation results in warm and dry extremities. If care is taken to avoid the ocular fibers (the section of which results in Horner's syndrome) and to leave the highest portion of the lumbar chain in the male intact (in order to preserve the power of ejaculation) there are no annoying sequelae. Case histories are presented: Hyperhidrosis in the hands was relieved in one case by paravertebral infiltration of alcohol round the first and second thoracic ganglions, with only a single night's hospitalization and without any interruption of the patient's employment. A second equally successful result has been obtained by Freeman. Nevertheless it is the author's belief that with rare exception surgical denervation is the better procedure, as its action is certain and the operative risk is almost nil in young and otherwise healthy individuals. After alcohol block there is considerable risk of incomplete results and some risk of producing a troublesome intercostal neuritis. The procedure must usually be carried out bilaterally, when it is safest to do the operation in two stages. The second operation can be done from four days to a week after the first, so that the total period of hospitalization is generally less than two weeks when both arms are denervated, and less than three weeks if both lumbar chains are resected.

New York State Journal of Medicine, New York

39: 299-400 (Feb. 15) 1939

*Treatment of Dermatophytosis with Trichophytin, Convalescent or Immune Serum and Vaccines. E. F. Traub and J. A. Tolmach, New York.—p. 305.
Study of Infant Welfare in St. Lawrence County in 1935. S. W. Sayer, Gouverneur, N. Y.—p. 314.
A Neglected Entity in Abdominal Pain and a Common Disease—Cicatrizing Enteritis. E. C. Cutler, Boston.—p. 328.
Surgical Treatment of Spastic Paralysis. F. A. Chandler, Chicago.—p. 338.
Treatment of Pneumococcus III Pneumonia with Rabbit Serum and Sulfanilamide. R. T. Garrett, Southampton, and J. R. Twiss, New York.—p. 345.
Economic Status of Patients Admitted to Tuberculosis Clinics of the New York City Department of Health. H. R. Edwards and Hazel D. Connell, New York.—p. 351.
Restoration of Muscle Balance in Treatment of Obstetric Paralysis. J. B. L'Episcopo, Brooklyn.—p. 357.
*Sulfanilamide in Treatment of Chancroid. B. A. Kornblith, A. Jacoby and M. Wishengrad, New York.—p. 364.
Common Duct Stone in an Early Typhoid Carrier: Case. H. D. Vickers, Little Falls, N. Y.—p. 369.

Treatment of Dermatophytosis.—A number of authors have reported high percentages of good results or "cures" with the various types of fungus extracts while a minority have found such preparations practically valueless. Traub and Tolmach question the advisability of using the term "cure" because only prolonged observation and repeated microscopic and cultural studies could determine this point. They believe that only those experiments can be accepted in which the authors actually proved that they were dealing with cases of dermatophytosis. "Mycotic-like" eruptions with a positive trichophytin test, cases of probable "ids" and eczematous hand and foot eruptions clinically called dermatophytosis and dermatophytid are not the carefully selected type of cases on which such a study should be based. It is difficult to evaluate accurately the results of therapy in dermatophytosis, which even if left untreated runs a most capricious course of improvement, apparent cure and relapse. Therefore the authors believe it doubly difficult to judge the value of the biologic remedies when local measures in addition to the injections of vaccines are used. Regardless of the type of vaccine or the type of case, the number of patients entirely uninfluenced by treatment remains high and

approximately the same and the number cured or improved relatively low. The longer that the authors followed their patients, the smaller grew the number of cases that they were able to report as "cured" or "improved." They do not feel that vaccine, trichophytin or convalescent serum treatment of dermatophytosis should be discarded but rather that stock of these agents should be taken. The biologic methods of treatment still belong in the laboratory and should not yet be advocated for general use. Some good results in a small number of cases have been reported, but the reasons for the small percentage of good results regardless of the methods of biologic treatment should be investigated. Perhaps the soil on which the fungi grow is altered by factors which have not been taken into account and which, if understood, might help in controlling the disease. Certainly the general health of the patient is a factor. In one instance a long standing proved case of dermatophytosis was completely cleared up following a thyroidectomy. The patient has been observed for seven years since operation and the eruption has not recurred. Methods of preparation of the vaccines and extracts and the question of dosages must be further studied and considered. At the present time it is the authors' belief that the usual local remedies, Whitfield's ointment, x-rays, boric acid ointment, wet dressings with boric acid, Burow's solution or potassium permanganate and the like are still the most practical and useful agents at hand. The routine use of fungus extracts and vaccines by the dermatologist and general practitioner is not yet justified by the results obtained. Further work must be done in this field and this should be considered experimental only.

Sulfanilamide for Chancroid. — Kornblith and his co-workers used sulfanilamide in the treatment of ten cases of chancroid. For the first five days the patient was given daily 80 grains (5.2 Gm.) of the drug, 20 grains (1.3 Gm.) after each meal and before bedtime. From the sixth to the fifteenth day, inclusive, 40 grains (2.6 Gm.) was administered daily, 10 grains (0.65 Gm.) after each meal and before bedtime. After this period, treatment was stopped whether or not the lesion was healed. The entire treatment was ambulatory. There were no untoward effects. The patients were cautioned to stop the drug if diarrhea developed and not to use a saline cathartic in case of constipation. They were instructed not to drink more than 1 quart (liter) of fluid during any twenty-four hours. The only other treatment advised was the use of soap and water to cleanse the lesion locally twice a day. The average time for healing was about two weeks. The authors state that, since the foregoing was submitted for publication, sixty-five proved cases of chancroid have been treated with sulfanilamide and followed. The results have been uniformly excellent. There has been no failure or recurrence. All the lesions were healed after two weeks of treatment with sulfanilamide alone.

Oklahoma State Medical Assn. Journal, McAlester

32: 45-82 (Feb.) 1939

The Surgical Diabetic. G. E. Stanbro, Oklahoma City.—p. 45.
*Dual Etiology of Intractable Asthma. R. M. Balyeat and L. E. Seyler, Oklahoma City.—p. 49.
Experience with Use of Prontylin: Case Report. H. R. Yandell, Ponca City.—p. 51.
Experience with Use of Larostidin: Case Report. G. H. Niemann, Ponca City.—p. 52.
Social Diseases at the Cross Roads. H. H. Porter, R. B. Witcher and C. Knoblock, Tulsa.—p. 54.
Lymphopathia Venereum. J. V. Van Cleve, Wichita, Kan.—p. 61.
Individuality in Treatment of Fractures Into or Near Joints. F. A. Stuart, Tulsa.—p. 64.

Dual Etiology of Intractable Asthma.—Balyeat and Seyler believe that more than 90 per cent of all cases of intractable asthma have a dual etiology: (1) sensitization factors (food, animal emanation and various dusts, pollen and miscellaneous) and (2) mechanical factors (mucus plugs, purulent bronchial secretions, asthmatic bronchiectasis and the usual form of bronchiectasis). Their recent work leads them to believe that the mechanical group of factors is of equal importance in the majority of cases and, in many, of greater importance than the sensitization factors. Practically all cases of intractable asthma start with periodic attacks of asthma due to local edema of the mucosa of the bronchial tubes, produced by contact with some substance to which the patient is specifically sensitive. Later a superimposed infection occurs in these patients, which leads to the production of mucus or purulent material. The plugging of the bronchial tubes with mucus or purulent exudate mechanically produces attacks of asthma. Why asthmatic attacks in cases of intractable asthma occur about the same time each night is explained by the authors by the fact that the amount and rate at which mucus is secreted determine when the bronchial tubes are filled and nature requires them to be cleaned out—the asthmatic attack. In many cases of asthma it is difficult to determine what actually causes death. During the last two years the authors made bronchograms in about 200 cases of intractable asthma, and they find that the majority of patients suffer from some type of bronchiectasis. Most of these patients had leukocyte counts of from 12,000 to 18,000, which is evidence of toxin absorption. They believe, therefore, that death in the majority of cases of intractable asthma is due to chronic sepsis.

Pennsylvania Medical Journal, Harrisburg

42: 465-592 (Feb.) 1939

Obstetric Review: Present Attainment and Future Hope. B. P. Watson, New York.—p. 475.
Effects of Sulfapyridine, Sulfanilamide and Related Compounds in Bacterial Infections. P. H. Long, Eleanor A. Bliss and W. H. Feinstone, Baltimore.—p. 483.
*Lipoid Pneumonia in Infancy and Childhood. I. J. Wolman, Philadelphia.—p. 492.
Rational Management of the Nephritic Child. E. S. Thorpe, Philadelphia.—p. 495.
Acute Infections of the Face. R. O. Dingman, Danville.—p. 499.
Roentgen Therapy: Adjunct in the Armamentarium of the Otolaryngologist and Ophthalmologist in Treatment of Infections. L. E. Wurster, Williamsport.—p. 506.
The General Practitioner and the 1938 Pneumonia Control Campaign. A. L. Luchi, Wilkes-Barre.—p. 509.
Care of the Skin of the Newborn: Study of the Noncleansing Technic. J. A. Ritter and Ruth Stephenson, Philadelphia.—p. 514.
Hypertension: Its Management. W. M. Bortz, Greensburg.—p. 517.
Worth-While Immunization Procedures. P. F. Lucchesi, Philadelphia.—p. 521.
Subglottic Carcinoma of the Larynx. L. H. Clerf, Philadelphia.—p. 527.
Early Diagnosis of Carcinoma of the Colon. J. A. Soffel, Pittsburgh.—p. 531.
Urticaria. S. R. Kaufman, Wilkes-Barre.—p. 534.
Postgraduate Obstetric and Gynecologic Education: The Practitioners' Review. N. W. Vaux, Philadelphia.—p. 537.
The Relation of the Ophthalmologist to the Pediatrist. W. S. Reese, Philadelphia.—p. 540.

Lipoid Pneumonia in Infancy and Childhood.—Broadly speaking, Wolman believes that lipoid pneumonia is preventable and that it could be eliminated if the facts concerning its etiology were known to all who share in the care of infants and children. Although individuals of any age may be affected, the disease is encountered more frequently at both extremes of life. Infants, and especially debilitated infants, seem to be particularly susceptible. The growing use of oily preparations, both as a source of vitamins and in the treatment of respiratory and gastrointestinal diseases, contributes to its increasing frequency. Infants should be fed cod liver oil only when awake and while held in a semierect or sitting position. Oily nose drops in the first two years of life are potentially dangerous; aqueous solutions for intranasal medication are preferable. Parents and nurses should be warned against the forcing of cod liver oil or other oils when the youngster refuses and resists. The blocking of a child's nostrils in order to make him swallow must be absolutely forbidden. Newborn or premature infants and all babies who vomit should be given vitamin concentrates rather than the larger doses of crude cod liver oil. In the feeding of oils and similar substances to weak or debilitated patients, especially to neurologic patients, the greatest forethought and precautionary care should be exercised; that is, aspiration should be prevented at any cost.

Public Health Reports, Washington, D. C.

54: 245-286 (Feb. 17) 1939

*The Formol-Gel Reaction in Rheumatic Fever: Aid in Diagnosis of Active Carditis. M. P. Schultz and Edythe J. Rose.—p. 248.
Concentration of Glutathione in the Erythrocytes of Patients with Rheumatic Fever. M. P. Schultz.—p. 264.

Formol-Gel Reaction and Carditis.—Schultz and Rose studied the serums of 108 febrile hospital or convalescent home patients afflicted with various diseases and seventy with rheumatic fever. The occurrence of both gelation and opacity were observed and recorded. When all the observations (or all in which the erythrocyte sedimentation rate was more than 9 mm.

an hour) in each group are compared, it is evident that positive formol-gel reactions were more frequently observed in rheumatic fever serums than in control serums, although the severity of the illness as reflected by an increase in the erythrocyte sedimentation rate was comparable in the two groups. This is due to the occurrence of more positive formol-gel reactions at relatively low erythrocyte sedimentation rates in the rheumatic fever patients. In the control patients ill with various febrile diseases, the formol-gel reaction was positive only in cases of severe illness. In these instances a parallel was demonstrable between the degree of erythrocyte sedimentation rate acceleration and the occurrence of positive reactions. The results in adult rheumatic fever patients severely ill with arthritis were similar. Patients with rheumatic carditis, on the other hand, reacted differently: (1) strongly positive formol-gel reactions were observed in individuals without obvious severe illness, with relatively little fever and with but slightly increased erythrocyte sedimentation rates, and (2) during the course of illness the occurrence of positive formol-gel reactions did not parallel that of most rapid erythrocyte sedimentation rates. In cases of rheumatic carditis the formol-gel reaction frequently became positive as the erythrocyte sedimentation rate was declining but coincident with the development of signs of active carditis. In some instances the test remained strongly positive while the erythrocyte sedimentation rate returned to normal. A strongly positive result in children, or in adults in the absence of arthritis, is suggestive of active carditis even in the presence of a relatively slow erythrocyte sedimentation rate. Persistently negative reactions indicate that severe carditis is probably not present and may be considered of favorable prognostic import. These observations suggest that the formol-gel reaction may be a valuable additional aid in determining the presence of active rheumatic carditis in patients known to be suffering from rheumatic fever. In those occasional instances in which positive formol-gel reactions persist longer than elevations in the erythrocyte sedimentation rate, this test may provide the only evidence of continued rheumatic activity warranting continued limitation of physical activity. The formol-gel reaction is apparently not influenced, as is the erythrocyte sedimentation rate, by the presence of cardiac decompensation or anemia.

Surgery, Gynecology and Obstetrics, Chicago

68: 257-594 (Feb. 15) 1939

Herniation Through the Diaphragm. J. J. Morton, Rochester, N. Y.—p. 257.
Experimental Traumatic Shock: Further Studies, with Particular Reference to Role of Nervous System. A. Blalock and R. D. Cressmann, Nashville, Tenn.—p. 278.
Benign Strictures of Bile Ducts with New Method of Treatment. G. E. Wilson, Toronto, Ontario.—p. 288.
Cancer of the Stomach. W. H. Ogilvie, London, England.—p. 295.
*Surgery for Ulcerative Colitis. F. W. Rankin, Lexington, Ky.—p. 306.
Regional Ileitis. B. B. Crohn, New York.—p. 314.
Regional Enteritis. C. G. Mixter, Boston.—p. 322.
*Medical Treatment of Bronchiectasis. J. J. Singer, Los Angeles.—p. 327.
*Results of Repeated Operations on the Stomach, Especially for Gastrojejunal Ulcers. H. Finsterer, Vienna, Austria.—p. 334.
Recurrent Hyperthyroidism: Report of 306 Cases Operated on from 1928 to 1937. R. B. Cattell and E. S. Morgan, Boston.—p. 347.
Contractures Due to Burns. W. T. Coughlin, St. Louis.—p. 352.
Evolution of Fracture Treatment. I. Cohn, New Orleans.—p. 362.
The Psychiatrist in Relation to Surgery. F. G. Ebaugh, Denver.—p. 372.
Treatment of Otitic Meningitis Due to Streptococcic Infection by Surgery and Sulfanilamide. C. H. McCaskey, Indianapolis.—p. 377.
Laryngeal Tuberculosis: Surgical Treatment Including Collapse Therapy. F. D. Woodward, University, Va.—p. 390.
Study of Medical and Surgical Aids to Hearing. J. A. Babbitt, Philadelphia.—p. 395.
Phylogenetic Development of Ear. J. M. Robb and H. Palmer, Detroit.—p. 401.
Ocular Manifestations of Allergy. W. B. Black, Kansas City, Mo.—p. 406.
Present Status of Surgery of Lacrimal Sac. R. O. Rychener, Memphis, Tenn.—p. 414.

Surgery for Ulcerative Colitis.—Rankin states that medical management of chronic ulcerative colitis, which consists of a dietary regimen, administration of vitamin C, elimination of focal infections and the use of vaccines and serum, is effective to some degree in the majority of cases. The principal indication for surgery is intractability to medical treatment with resulting damage to the colon, following which the function of the colon is lost and under which conditions it becomes filled with pus and detritus and is a source of absorption. Therefore surgery for chronic ulcerative colitis as for duodenal ulcer is indicated only for the complications, which occur in 15 per cent of the cases. These complications call for various types of surgical intervention. Surgery in the acute, fulminating or hemorrhagic forms of ulcerative colitis has few, if any, advantages. In this type of condition, ileostomy which completely by-passes the fecal current may be done under local anesthesia and occasionally appears to accomplish something. Total or subtotal colectomy should be carried out in multiple stages. Multiple stage operations increase the margin of safety. Sufficient time after an ileostomy should be allowed to elapse before resection is undertaken, in order to replace fluid loss, balance the blood chemistry and increase body weight and strength. The removal of a part or all of the large intestine for chronic ulcerative colitis is definitely desirable when the colon has lost its function.

Medical Treatment of Bronchiectasis.—In the diagnosis of the various types of bronchiectasis, infinite care must be exercised to arrive at definite conclusions. Fortunately, Singer declares that x-ray studies, expert laboratory facilities and the increased acumen in physical diagnosis have made it possible to sift out properly the bronchiectasis from the many pulmonary cases which formerly were diagnosed as tuberculosis, abscess of the lung or even as malignant conditions. Probably the greatest strides thus far have been in finding suitable cases for surgical approach. It has taken almost twenty years to have a fairly good idea of bronchiectasis, and in the next few years a cure may even be found. The careful study of the bacteriologic flora has contributed much to the knowledge of bronchiectasis. The treatment of sinus infections along with other symptomatic treatments have been helpful. The use of postural drainage has kept many patients so well drained of their purulent secretions that complications have been kept down to the minimum. The use of compression belts to support the abdominal muscles and also to raise the diaphragm has been effective in reducing discomforts of coughing and also aiding in expectoration. Medical treatment, while not always effective, has often improved the patient sufficiently for surgical treatment to be undertaken.

Results of Repeated Operations on Stomach.—Finsterer gives the results in a series of 331 cases in which repeated operations (2,753) were performed. There was a total mortality of 11.7 per cent, but it dropped to 8.6 per cent if cases complicated by acute perforation, acute hemorrhage or gastrocolic fistula are omitted. The most frequently performed previous operation was gastro-enterostomy, 190 cases, after which either the old ulcer had not healed or a gastrojejunal ulcer had formed. The radical operation for a gastrojejunal ulcer, following posterior gastro-enterostomy, shows a lower mortality, 6.8 per cent, than when it follows resection, 23.5 per cent. Therefore an operation is indicated at once by the return of complaints in a patient after gastro-enterostomy; and it is to be delayed if the complaints return after resection until at least several attempts with medical therapy have been made. The mortality rate attending the radical operation for recurrent gastrojejunal ulcer is 21.4 per cent. In acute perforation even the lesser operation, either closure or excision of the ulcer, produces poor results. Radical operation for gastrojejunal ulcer under general anesthesia showed a mortality rate of 42.1 per cent, nineteen cases with eight deaths. Three of these deaths were directly attributable to the anesthetic. With local anesthesia the mortality rate was 14.1 per cent. The best permanent results are achieved with the extensive two-thirds to three-fourths resection of the stomach and the preparation of the end to side anastomosis according to Hofmeister-Finsterer, even though there may have been several preceding operations. Of ninety-six patients, eighty-eight are permanently cured, or 91.6 per cent. The author states that the recurrence of a gastrojejunal ulcer after radical operation is not due to special ulcer disposition but to technical faults, too limited resection, Y shaped anastomosis or entero-anastomosis. Therefore, by avoiding these errors in technic, permanent cure is possible even after repeated resections. The term "surgically incurable ulcer" is not applicable to this type of case. The disadvantages of extensive gastric resection, too small a stomach and anemia are of little consequence since they are more easily controlled than a gastrojejunal ulcer following inadequate gastric resection.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Australian and New Zealand J. Surgery, Sydney

8: 225-332 (Jan.) 1939

Percival Pott and His Puffy Tumor. K. F. Russell.—p. 225.
Cerebrocranial Injuries. G. W. Swift.—p. 228.
Drainage in Acute Appendicitis. A. Newton.—p. 241.
Achalasia of the Esophagus. R. Flynn.—p. 244.
Prostatic Surgery: Questions of Hemostatis and Secondary Hemorrhage. H. Newland.—p. 263.
Cause and Diagnosis of Prostatic Obstruction. R. G. S. Harris.—p. 266.
*Cellulitis of the Colon: Manifestation of Diverticulitis. W. A. Hailes. —p. 270.
Anesthesia in Gallbladder Disease: Methods of Treatment in the So-Called "Bad Risk Cases." H. J. Daly.—p. 280.
Motor Mechanisms of the Forebrain. F. Goldby.—p. 285.

Cellulitis of the Colon.—Obstruction from inflammatory reaction and swelling of a length of colon, occurring at the time of the acute inflammation, is the only type of intestinal obstruction that Hailes has encountered in diverticulitis. He refers to true obstruction and not to impaired function of the sigmoid colon. This swelling is much more extensive than that usually seen in the cecum in association with acute appendicitis in those cases in which the cecal wall is involved, a statement which applies both to the induration of the intestinal wall and to the length of intestine involved. The acutely inflamed sigmoid colon appears quite often to be the origin of the inflammatory exudate and not the diverticula. A large area of visceral peritoneum is inflamed. Because of the association of the swelling of the intestine with acute inflammation in one or more diverticula in these cases, it can be assumed that the inflamed diverticulum is responsible for the cellulitis and this cellulitis may be the most prominent lesion present. The cellulitis may be localized to one portion of the sigmoid colon or involve the whole sigmoid or even the whole of the descending colon. The degree of swelling of the intestine may be extreme and it is not uncommon to see a sigmoid loop so swollen and indurated that the loop in question is unmanageable surgically if obstruction has supervened. Cellulitis of the intestine pursues the same course as cellulitis elsewhere in the body and may lead to resolution, local abscess formation, with or without rupture, or obstruction. The presence of diverticula merely indicates the possibility of diverticulitis. A long filling defect, associated with a short history, inflammatory signs and the presence of diverticula, is significant but affords no more than a ray of hope that the condition may not be malignant. The author's experience is that the more extensive the cellulitic reaction, the more likely is the condition to be inflammatory and not malignant.

British Journal of Ophthalmology, London

23: 81-144 (Feb.) 1939

"Egyptian Ophthalmia." F. W. Law.—p. 81.
Ocular Changes Associated with Naevus Flammeus. J. J. Evans and P. J. Evans.—p. 95.
Fluid Equilibrium of Body and Its Relation to the Eye. J. D. Robertson. —p. 106.

British Medical Journal, London

1: 199-256 (Feb. 4) 1939

Fractures of the Neck of the Femur: Review of Thirty-Three Consecutive Cases. S. T. Irwin.—p. 199.
Tuberculosis: Dogmas and Doubts of Sixty Years. J. M. Martin.—p. 204.
*Epidemic Nausea and Vomiting. J. D. Gray.—p. 209.
*Sporadic Infections Due to Bacillus Typhosus. J. R. W. Hay.—p. 211.
Four-Lead Electrocardiograms Taken Fifty-Three Hours Before and After the Onset of Attack of Coronary Occlusion. A. Schott.—p. 213.
Operation for Fracture of the Olecranon. N. Dunn.—p. 214.

Epidemic Nausea and Vomiting.—Toward the end of 1938 an outbreak of nausea and vomiting occurred in South Hampshire. Gray describes this epidemic in order to show that the Thanet outbreak reported by Miller and Raven in 1936 was not an isolated incident and to suggest the probability of the widespread incidence of the disease. In general the illness is short, lasting about two days. The patient complains of dizziness, nausea and vomiting. Less frequently, dizziness and nausea alone may occur. It is usually afebrile. In the South Hampshire epidemic, frontal headache and occasionally bradycardia were also noted. In common with the Danish outbreak (1935) diarrhea was encountered in the epidemic reported by the author and a higher incidence of mild pyrexia was seen as compared with that in Thanet. The epidemic occurred in an institution and the surrounding country at the same time, the total number of patients being twenty-six: thirteen women, six men and seven children. The first case was seen September 26 and the last October 31. Nineteen patients complained of giddiness, twenty-four vomited and all had nausea. Diarrhea was complained of by eleven, three had slight elevation of temperature, three had frontal headache and three had abdominal tenderness. As the disease is of such short duration it is difficult to decide what particular system is attacked. Earlier papers suggest either the gastrointestinal or the nervous system. So far, in all examinations made no organisms known to cause gastro-enteritis have been found. The greatest argument against a food or water contamination is the type of spread in families. Instead of the whole community going down at once there is a gradual peripheral spread. In the school cases two children went home and two days later both parents contracted the disease. In cases 15 to 20 of the country epidemic the passage from one individual to others in the family is clearly seen. Evidence would suggest that it is a person-to-person infection with an incubation period of at least two days. As Miller and Raven suggest, the probabilities point more to an acute infection of the central nervous system, possibly of a virus type. All the symptoms except the diarrhea may then be explained. Presumably a droplet infection is the mode of spread. It is difficult to assume that the attacks heretofore reported are isolated incidents; more probably sporadic cases occur about the country and flare to epidemic proportions only when the environment is ripe. The importance of this disease does not lie in its manifestations, which are mild, but in the possibility of its being confused with an outbreak of food poisoning or Sonne dysentery when it occurs in institutions. The latter are more serious matters than epidemic nausea and vomiting.

Sporadic Cases of Typhoid.—Hay gives an account of ten nonepidemic cases of typhoid seen during the last four years in two relatively small areas (population approximately 45,000 each). He believes that his report illustrates the protean nature of the disease with regard to its clinical manifestation, infectivity and transmission. In only two instances was typhoid suspected during the initial stages of the disease. The author states that his ten cases of sporadic typhoid illustrate (1) the difficulty in establishing a correct and early diagnosis on clinical grounds alone, (2) the importance of obtaining a specimen of blood for examination in any obscure case of fever or indefinite illness, (3) the apparent variation in susceptibility of individuals to infection, (4) the fact that transmission of the disease may occur in so many ways that each case presents an individual problem and (5) the value of close cooperation between the medical practitioner and the medical officer of health.

East African Medical Journal, Nairobi

15: 317-360 (Jan.) 1939

Pulmonary Tuberculosis in Africans. W. H. Smith.—p. 318.
Observations on Nephritis in Uganda Natives. R. S. F. Hennessey. —p. 329.
Disposal of Night Soil in Small Townships (Modification of Indore Process). A. J. Boase.—p. 341.
Malaria Research in Tanganyika. Notes on reports by R. R. Scott.—p. 347.

Journal of Neurology and Psychiatry, London

2: 1-96 (Jan.) 1939

Compulsive Features in a Patient with Leber's Disease. F. J. Curran. —p. 1.
The Arm Reflexes. G. De M. Rudolf.—p. 7.
Persistent Mirror Movements as a Heredofamilial Disorder. E. Guttmann, W. S. Maclay and A. B. Stokes.—p. 13.
Short-Distance Prognosis of Schizophrenia. E. Guttmann, W. Mayer-Gross and E. T. O. Slater.—p. 25.
Cortical Projection of the Medial Geniculate Body. H. H. Woollard and A. Harpman.—p. 35.
*Narcosis Therapy: Critical Review. R. D. Gillespie.—p. 45.

Narcosis Therapy.—In his critical review of the value of therapeutic narcosis, Gillespie states that continuous narcosis if thoroughly carried out is still fraught with some danger in spite of modifications in treatment. Freedom from risk is proportionate to the experience and care of those undertaking the treatment. The recovery rate in continuous narcosis in recent

psychoses never exceeds and usually falls short of the ultimate spontaneous recovery rate. Its therapeutic value is therefore confined mainly to curtailing the duration of psychotic conditions which would eventually pass spontaneously. It is most successful in manic excitements and considerably less successful with depressions of the manic depressive type. With recent schizophrenic disorders its effects are best in excited schizophrenia of the agitated fearful type and in hebephrenia in which the onset has been acute. Psychogenic schizophrenic disturbances in schizoid psychopaths are particularly amenable to this method. Little success is obtained with paranoid schizophrenia and with catatonic stupor. In general, when a psychotic illness follows a relapsing, recurring or periodic course with an acute onset and exogenic causes the more likely is continuous narcosis to curtail the episode. These are essentially the more spontaneously recoverable types. Continuous narcosis also has an administrative value in making chronic psychotic excitements more manageable. Occasional unexpected social recoveries are produced in chronic depressive (affective) psychoses and in chronic schizophrenia. Recently two authors obtained an unprecedentedly high recovery and discharge rate in a small group of schizophrenic patients in whom the duration of the illness was more than two years. The treatment is still entirely empirical and its efficacy is difficult to estimate because different investigators employ varying diagnostic criteria.

Lancet, London

1: 189-248 (Jan. 28) 1939

Effect of War on Civilian Populations. M. Wright.—p. 189.
Hormone Relationship Between the Ovary and the Adrenal Gland and Its Significance in the Etiology of Mammary Cancer. W. Cramer and E. S. Horning.—p. 192.
*Combined Serum and Sulfanilamide in Treatment of Streptococcic Infections in Mice. H. Loewenthal.—p. 197.
*Use of Placental Blood for Transfusion. A. P. M. Page, K. G. Seager and E. M. Ward.—p. 200.
*Transfusion with Placental Blood. J. Halbrecht.—p. 202.
Diverticula of the Duodenojejunal Flexure. R. W. Raven.—p. 203.

Serum and Sulfanilamide in Infections.—Loewenthal states that a single dose of sulfanilamide administered at the time of infection with hemolytic streptococci will protect only a minority of normal mice, whereas it protects the majority of animals which have received, from sixteen to eighteen hours before infection, a dose of antiserum which by itself is incapable of preventing death. Mice infected with hemolytic streptococci can be effectively treated with a combination of sulfanilamide and antiserum even if this treatment is given as late as eighteen hours after infection, when the animals are already severely ill. Since neither sulfanilamide nor antiserum alone achieves this result, it appears that these two agents act in a different but complementary manner.

Placental Blood for Transfusion.—Page and his associates have given twenty-five transfusions of stored placental blood and have had only one severe reaction. This did not appear to have been due to the placental blood but to the development of iso-agglutinins to the cells of the original donor, the patient's son. Slight rises of temperature have occurred on other occasions early in the series and have appeared to follow undue heating of the blood. The authors are now of the opinion that it is unnecessary to heat the blood to body temperature before use. Placental blood is preferable to ordinary adult blood because it contains no food allergens and because its clotting power is greater. The latter is an advantage in dealing with hemorrhage. A citrate saline solution has been found to be the best anticoagulant, for it gives minimal hemolysis after prolonged standing. Sterile collection of the blood is imperative if contamination is to be avoided. The authors find that the third stage of labor is not prolonged when placental blood is collected. There was no appreciable difference in the blood counts of twelve babies whose placentas had supplied blood and twelve controls, performed on the first, second and seventh days after birth and immediately before discharge from the hospital on about the fourteenth day. Icterus occurred in mild degree in three cases, one in the placental group and two in the control group.

Transfusion with Placental Blood in Malaria Countries.—Halbrecht points out that the use of preserved blood, especially placental, has an added advantage over fresh blood in countries with endemic malaria. To be absolutely safe one must not inject fresh blood from any one who has at any time had malaria, whereas with placental blood, even if the mother has had malaria recently, the organisms usually do not pass the placental filter. Still more important is the fact that in preserved blood the plasmodium dies quickly. Preserved placental blood is thus doubly safeguarded. Up to now 116 transfusions of placental blood obtained from 520 placentas have been given. There were no serious accidents and only four reactions, three consisting of a chill and one of dyspnea and tachycardia. The author urges the greater exploitation of this source of blood and states that the need of blood for transfusions in Palestine is great, owing to the large number of casualties admitted.

Medical Journal of Australia, Sydney

1: 93-130 (Jan. 21) 1939

Medicine Past and Present. H. M. Fletcher.—p. 93.
*Serologic Types of Hemolytic Streptococci Causing Scarlet Fever in Sydney. C. White, G. V. Rudd and H. K. Ward, in association with F. H. Wilson and N. J. Symington.—p. 96.
Observations on Epidemiology of Streptococcic Infections. E. V. Keogh and Helen Kelsey.—p. 100.
Occurrence of Hymenolepis Diminuta (Rudolphi, 1819) and Dipylidium Caninum (Linnaeus, 1758) as Parasites of Man in Australia. A. J. Bearup and E. L. Morgan.—p. 104.
Group Practice. L. J. J. Nye.—p. 107.
A Trip Abroad, 1937-1938. J. E. Sherwood.—p. 112.

Types of Scarlet Fever in Sydney.—During a mild epidemic of scarlet fever in Sydney during the winter of 1936, White and his co-workers isolated and typed the infecting strains of hemolytic streptococci from 314 patients. The serologic classification of Griffith was used and the prevalent epidemic strain was found to be type XVII. A similar survey was carried out in the late summer, autumn and winter of 1938. During this period there was no epidemic prevalence of scarlet fever. No one serologic type predominated among the 307 patients. Type XI was found throughout the whole period, but its incidence remained at a fairly steady level. The distribution of Griffith's types causing scarlet fever in Sydney is different from the distribution found in England. In England, types I, II, III and IV account for from 60 to 70 per cent of scarlet fever; in Sydney, 75 per cent of the scarlet fever was caused by types I, IV, XI and XVII in the period under review. A comparison of the capsulated and noncapsulated strains suggests that the capsulated strains have a greater tendency to spread in a community. The capsulated strains are much more likely to give rise to familial infections than the noncapsulated strains. Cross infection was the rule rather than the exception. This confirms similar work in English hospitals.

Tubercle, London

20: 145-204 (Jan.) 1939

Fibrosis of the Lungs. G. T. Hebert.—p. 145.
*Treatment of Tuberculous Cervical Adenitis by Intraglandular Injections of Gelatin, Acriflavine, Calcium Chloride (GACC). R. A. Hunter.—p. 161.
Tuberculosis in Cyprus (Final Report). N. D. Bardswell.—p. 165.

Treatment of Cervical Adenitis.—Hunter used a medium made up of 0.85 Gm. of sodium chloride, 5 Gm. of calcium chloride, 5 Gm. of gelatin, 0.05 Gm. of acriflavine and enough distilled water to make 100 cc., in the treatment of twenty-one children with tuberculous cervical adenitis from 20 to 35 mm. in diameter. The medium was injected into the abscessed gland. From 0.3 to 0.5 cc. of the solution was used for every daily injection. The abscess regressed in twenty cases. Bilateral involvement was found in a few cases, and they responded satisfactorily to treatment. Scarring occurred in only three cases, in two of which they are difficult to detect. Twenty-nine children with slight adenitis with glands less than 20 mm. in diameter, and possibly tuberculous, received an average of three injections each of solution. A favorable response was obtained in twenty-eight. This method appeared to inhibit further hyperplasia; it holds out great promise in the prevention or treatment of cervical adenitis. After the medium has been injected at about six sites and provided the gland ceases to enlarge and soften, the injections can be discontinued until no further reduction in size takes place for a fortnight before more injections are given.

Bruxelles Médical, Brussels

19: 563-592 (March 5) 1939

Is Silicosis a Disease Entity? A. Langelez.—p. 563.
*Importance of Facial Paralysis in Localization of Cerebral Tumors. Y. Piette.—p. 572.

Facial Paralysis in Localization of Cerebral Tumors.—Piette maintains that facial paralysis is observed frequently in the evolution of cerebral tumors. In the examination of thirty cases presenting the syndrome of intracranial hypertension it was observed twenty-one times. In one case it was due to a chronic subdural hematoma and in three cases an arachnoiditis existed. In the other cases there existed tumors of the cerebral hemispheres or of the posterior fossa. Facial paralysis was accompanied by homolateral pyramidal signs in five cases (frontoparietal tumor, tumor of the thalamus, craniopharyngioma, rolandic tumor and tumor of the fourth ventricle). The facial paralysis was of the peripheral type in only four of the cases; the cases in question were acoustic neurinoma, arachnoiditis of the posterior fossa, tumor of the fourth ventricle and a meningioma adhering to the tentorium cerebelli, passing between the cerebellar tentorium and the cerebral peduncles and then passing under the tentorium into the posterior fossa. This tumor was accompanied by homonymous, left-sided hemianopia and the syndrome of the right cerebellopontile angle. Facial paralysis of the peripheral type is an important symptom of tumors of the acoustic nerve and of the cerebellopontile angle. Facial paralysis of the central type is frequently encountered in cerebral tumors of various locations. When the paralysis is an isolated symptom it permits only the determination of the side of the location of the tumor. On the other hand, it assumes great importance if it is accompanied by early psychic disturbances or by motor aphasia. In these cases it indicates almost with certainty a tumor of the frontal lobe.

Gynécologie et Obstétrique, Paris

39: 81-160 (Feb.) 1939

Ovarian Endometriosis: Anatomic, Clinical and Therapeutic Study. G. Cotte and J. Mathieu.—p. 81.
*Indications for Ovariectomy in Course of Gestation. L. Portes and Varangot.—p. 99.
Fourteen Observations of Low Cesarean Sections with Exclusion of Inferior Segment and Drainage According to Mikulicz. L. Digonnet.—p. 105.
Investigations on Serous Phosphatasemia in Course of Pregnancy. J. Caderas de Kerleau and J. Cayla.—p. 112.
Experimental Comparative Studies on Several Abortifacients. A. Patoir, G. Patoir and H. Bédrine.—p. 116.
Influence of Crushing and of Enucleation of Corpus Luteum on Menstruation. N. Kakuschkin.—p. 125.

Ovariectomy During Gestation.—Portes and Varangot maintain that the majority of surgeons, believing that the early exeresis of ovarian cysts avoids the complications due to their rapid growth, their suppuration and especially their torsion, think that "all cysts of the ovary that are diagnosed must be subjected to surgery." This essentially prophylactic conception, and from this point defensible, seems nevertheless in need of revision on the basis of the present biologic knowledge. Ablation of ovarian cysts is not always indicated because some of them, the follicular cysts for example, must be considered as "functional" cysts, abnormal to be sure but likely to disappear spontaneously after the biologic disorder which has given rise to them has subsided. In the course of gestation the prophylactic attitude which favors the ablation of the ovarian cysts appears to have greater justification by reason of the extreme frequency of torsion, which may develop unexpectedly either in the course of gestation or immediately after delivery. However, there are contraindications to surgical intervention; on the one hand, it must be considered that many of the cysts are purely functional; the lutein cysts, for instance, are relatively frequent in the course of gestation; on the other hand, the effects of ovariectomy on the development of the frequency are uncertain. On the basis of experiments on animals and of clinical observations, the authors have been led to accept the following points with regard to ovariectomy in the course of gestation: 1. Ovarian cysts that are diagnosed during pregnancy do not necessarily have to be subjected to surgical treatment or, in an emergency, they have to be so treated only as late as possible. 2. It is wise to remove them only when this is necessary on account of mechanical or infectious complications (torsion, hemorrhage and suppuration). 3. Even in cases in which the intervention is formally indicated, it is advisable to respect the corpus luteum as much as possible, which is easy when it is localized in the healthy ovary, but it is also often possible by dissection or partial resection of the cystic pockets, when it is localized in the diseased ovary. 4. Finally, in the cases in which the ablation of the corpus luteum is inevitable, it is advisable to substitute for it, after the operation, by injecting daily and for a long period massive doses of progesterone without counting too much on the secretory action of the placenta. The authors consider this attitude as the one which, at least in principle, respects the pregnancy as much as possible when it is associated with the development of ovarian cysts.

Presse Médicale, Paris

47: 257-280 (Feb. 18) 1939. Partial Index

Contribution to Study of Pleural Endothelioma. E. Sergent and R. Kourilsky.—p. 257.
Fibrous Osteitides Without Parathyroid Adenoma. R.-J. Weissenbach and J.-A. Lièvre.—p. 260.
*Accidents in Skiing. J. Braine and C. Goury.—p. 263.
Dilatation of Bronchi and of Trachea in an Adult. D. Olmer, J. Olmer, J. Vague and J. Gallian.—p. 272.
Septic Infarct of Myocardium in Course of Secondary Malignant Endocarditis. R. Lutembacher.—p. 273.
Gastric Syphilis. S. Davicovic.—p. 275.
Roentgenologic Aspect of Notches of Vertebral Bodies of Children: Its Anatomic Substrate. P. Passebois and P. Bétoulières.—p. 280.

Accidents in Skiing.—Having discussed the incidence and the etiology of skiing accidents in a previous report, in this paper Braine and Goury take up the lesions as such. The lesions of the inferior members are most frequent and most characteristic in skiing. The typical lesions result first of all from torsional movements, conditioned by the close connection of the foot with the ski. Soon they are restricted to the region of the ankle, the most vulnerable site in the skier; soon the torsion is transmitted to the knee. Moreover, the lesions may be in the hip or in the trochanteric region. The sprains of the ankle joint injure chiefly the external lateral ligament, the anterior talofibular fasciculus of which is typically broken by forced adduction. Following further discussion of benign and grave sprains of the ankle joint, the author takes up the typical skiing injuries of the knee joint. The majority of them, not being grave, escape medical control, for many skiers content themselves with bandaging their own injured knee. As a rule it is the tibial collateral ligament which is injured. Other lesions of the knee that are encountered in skiers are ruptures of the cruciate ligaments and partial fractures by tearing away of the tibial spine, the edge of the tibial plate and so on. Lesions of the menisci, although often suspected, are rarely confirmed. The fractures of the leg that are typical for skiing are the spiral fractures. The tibial lesions are usually located below the middle of the leg. The point of the upper fragment often menaces the skin. The fibula is usually fractured higher up than the tibia. Nevertheless, although it happens rarely, the two bones of the leg may be fractured simultaneously and at the same level. Fractures of the thigh result often from direct contact with an obstacle. However, spiral fractures by torsion are also observed in the thigh. They are often in three fragments and are localized either in the upper third (subtrochanteric) or in the median third of the diaphysis. Fractures of the neck of the femur are rare in skiers, but trochanteric fractures are characteristic, particularly in skiers with insufficient training. Sprains of the hip joint and ruptures of the pelvitrochanteric muscles may give rise to deep pericoxal hematomas. Among the lesions of the superior members the dislocation of the shoulder takes the first rank. The role of the skiing sticks seems to have been exaggerated in the etiology of this lesion. It appears that a certain position of the arms favors this lesion. The traumas of the hand of the skier have two classic locations: they are metacarpophalangeal sprains of the thumb and metacarpal fractures. In these lesions the skiing sticks do play an essential etiologic part. Other lesions of the superior members which occur in skiing are those of the wrist, the forearm, the elbow and the humerus. Excoriations, particularly of the face, may result in unsightly scars. Although cranial fractures are rare, commotio cerebri and lesion of the eye are of considerable importance. Some of the ocular lesions

lead to loss of vision. Traumas of the vertebral column involve chiefly the cervical portion. The thoracic lesions are as a rule more or less severe contusions. Traumas of the abdomen may cause visceral lesions. After pointing out that adequate training of the skier will prevent many accidents, the authors stress the importance of suitable first aid. Transportation of the injured has been organized and improved by the efforts of an international association. Discussing transportation, the authors stress the advantages of Pourchier's ski-sleigh, a sort of stretcher-sleigh combination which can be constructed with the aid of the skiing equipment, the skis serving as runners and the sticks as framework of the stretcher; illustrations clarify the construction. The treatment of sprains has been greatly improved since the use of Leriche's method (local injection of anesthetics) has become widely known. Many skiers now carry syringes and ampules with them. The reduction and immobilization of fractures must be accomplished as early as possible.

Schweizerische medizinische Wochenschrift, Basel

69: 165-188 (Feb. 25) 1939. Partial Index

Criticism of Short Wave Therapy on Basis of Histologic Aspects. S. Jellinek.—p. 165.
Practical Hematology. W. Meyer-Hartmann.—p. 170.
*Second Disease in Pernicious Anemia. H. Liechti.—p. 172.
Changes in Secretion and in Blood Following Gastric Operations. G. G. Fravi.—p. 174.

Second Disease in Pernicious Anemia.—Liechti maintains that, if a patient with pernicious anemia contracts a second disease, the latter may replace the manifestations of the first. The second disease effects an alteration in the hemopoiesis; it does not, as might be assumed, further develop the megalocytic hyperchromic blood picture. On the contrary, the hemogram has a tendency to assume a hypochromic character with macrocytic or normocytic erythropoiesis. The myelopoiesis, which is usually impaired in pernicious anemia, often shows a considerable increase under the influence of the second disease. If observed early, this alteration in the hemopoiesis may be of great diagnostic significance; not that it indicates the type of disorder, but it does indicate that such a disorder exists, even though its symptomatology is still latent. The author describes case histories to illustrate this. In the first case gastric cancer developed in addition to pernicious anemia. The alteration in the hemopoiesis was observable several months before the gastric symptoms appeared. In the second case pulmonary tuberculosis developed in addition to pernicious anemia. In this case again a hyperchromic hemogram was changed to a hypochromic one. The author concludes from these observations that patients with pernicious anemia are in need of constant supervision of their blood picture not only because of a possible relapse of the pernicious anemia but also because a second, perhaps more malignant, disease may develop and produce alterations in the hemogram. Cases of pernicious anemia which later became complicated by gastric cancer have been reported repeatedly in recent years. The concurrence of these two diseases does not seem to be mere accident. To be sure, in some instances of concurrence the gastric cancer is primary, and anemia with the aspects of the pernicious type develops after the extensive gastric resection.

Folia Medica, Naples

25: 57-112 (Jan. 30) 1939. Partial Index

*Urea in Suppurative Surgical Infections. A. G. Chiariello.—p. 61.
Chemical Changes of Skeletal Muscles from Electrical Trauma. G. Montemartini.—p. 76.

Urea in Surgical Infections.—Chiariello observed the results of local application of urea in the treatment of surgical infections in thirty-one cases. The results were satisfactory. In the first series of experiments he observed the effects of urea in comparison with those of other local treatments (application of olive oil or of a 5 per cent solution of tannic acid or a local aseptic medication) in experimental septic burns. In the second series he compared the evolution of experimental aseptic wounds which were treated by local application of either urea solution or of a local or aseptic medication. The author found that urea has a detergent and deodorant action and that it stimulates regeneration of infected tissues. The results are better in chronic osteomyelitis, suppurated favus of the neck and infiltration of the urinary tract from suppuration than in varicose ulcers of long duration and in some other conditions which are related to factors other than the local ones. The treatment gives satisfactory results when it is administered after performance of the necessary surgical interventions but not otherwise. Urea stimulates autolysis of dead tissues and increases the local defenses of new tissues against the local infection. The action of urea on epithelization is slight. The bactericidal effect of urea is indirect. From the clinical and experimental results the author concludes that urea is of value in the treatment of surgical infections.

Gazzetta degli Ospedali e delle Cliniche, Milan

60: 25-48 (Jan. 8) 1939

*Mester's Test for Diagnosis of Rheumatic Diseases. G. Braghin.—p. 27.

Mester's Test for Rheumatic Diseases.—Braghin performed Mester's salicylic acid test on a group of 135 persons either normal or suffering from rheumatic or nonrheumatic diseases. The test was carried out by the original technic, which is as follows: Blood is withdrawn from the middle finger of the right hand of fasting patients before and again thirty and sixty minutes after administration of two or three intracutaneous injections of 0.2 cc. each of a sterile 0.1 per cent aqueous solution of salicylic acid, and the number of leukocytes is determined after each withdrawal. The injections are made at the flexor aspect of the right forearm at a distance of about 5 cm. from each other. They are followed by severe pain and burning sensation of short duration and by the formation, at the points of the injections, of wheals which disappear in a few hours. Positive results are shown by transient leukopenia within the first thirty minutes (and in rare cases within the first sixty minutes) after administration of the injections. The diminution of the leukocytes varies from 20 to 50 per cent or more in comparison with figures which existed before administration of the injections. The author reports the results of his observations in tables. The test gave positive results in all forty-five patients (first table) who were suffering from rheumatic diseases which included acute, subacute and chronic rheumatic polyarthritis, rheumatic ankylopoietic spondylarthritis, rheumatic ischalgia, rheumatic fever with cardiac complications and chronic rheumatic iridocyclitis. The number of leukocytes diminished within 30 and 50 per cent but not more than that. The positive results were obtained in forty cases in the blood which was withdrawn thirty minutes after the injection and in five cases in that which was taken sixty minutes after the injection. The test gave negative results in the group of thirty-one patients (second table) who were suffering from nonrheumatic diseases with symptoms similar to those of rheumatic diseases. The group included patients with tuberculosis, syphilis, articular gonococcic infection and gout. The test gave also negative results in a group of fifty-nine persons (third table), including normal persons and patients with other than rheumatic diseases. The author concludes that the test is specific for the diagnosis of rheumatic diseases. The test is a hemoclastic reaction of the type of that described by D'Amato for syphilis rather than an anaphylactic reaction, as the author previously believed.

Riforma Medica, Naples

55: 161-200 (Feb. 4) 1939

Functional Relations Between Spleen and Stomach. L. Gipperich and U. Butturini.—p. 163.
*Chemotherapy in Gonorrhea. M. Muscolino.—p. 170.
Multiple Congenital Malformations of Leg. V. Ferrara.—p. 178.

Sulfanilamide in Gonorrhea.—Muscolino observed 161 patients who had been given sulfanilamide in the treatment of gonorrhea. All but six (girls) were adults. The adults were given the sulfanilamide in daily doses of from 2 to 3 Gm. in cycles of five consecutive days each with intervals of rest for four days, during which time no other drug was administered, until two cycles had been reached and in rare cases four cycles. The six girls, who had vulvovaginitis, were given daily doses of 1 Gm. for four consecutive days followed by intervals of rest of four days, without any other drugs, up to two and rarely three cycles. Local antiseptic lavages of a weak (1:10,000) permanganate solution were administered daily all during the treatment. The latter failed to control the vulvovaginitis in young girls and was soon discontinued in

three adults because of the intolerance of the patients. The treatment controlled gonorrhea in 113 of 152 adults. The symptoms are abated early in the course of the treatment; the secretion is diminished and soon disappears. As observed microscopically, gonococci completely disappear from the secretion. The drug gives the best results in chronic and subacute gonorrhea and their various complications and better results in men than in women. The satisfactory results are permanent. The author observed the behavior of the crasis of the blood and the spermatogenesis during and after administration of sulfanilamide, in the mentioned doses. It had a slightly harmful but transient effect on the crasis of the blood of fifty patients with acute gonorrhea. It did not interfere with spermatogenesis in five normal men or in five cases of acute gonorrhea. Muscolino therefore concludes that sulfanilamide is valuable in the treatment of gonorrhea and that in the mentioned doses it is both efficient and harmless.

Archiv für Gynäkologie, Berlin

168: 1-350 (Jan. 17) 1939. Partial Index

Endometriosis Externa with Consideration of Cases of Unusual Localization. M. Tausch.—p. 8.
Aminogenic Fetal Deformities. F. Movers.—p. 22.
Naegel's Computation of Term of Birth in Light of Knaus's Theory. F. Friedl, L. Rindler and A. Geller.—p. 26.
Hormone Content of Placenta in Prolonged Pregnancy. K. D. Rosenkranz.—p. 51.
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Substances Inhibiting Uterine Activity in Thymus and Liver of Fetus. S. Tapfer.—p. 169.
*Treatment of Benign Uterine Hemorrhages in Women Over 40 with Special Consideration of Symptoms of Abolished Function. M. Penkert.—p. 209.
*Prognosis of Postpartum Intra-Uterine Interventions if Performed in Clinic. F. Geppert.—p. 235.
Practical and Theoretical Aspects of Treatment of Menstrual Anomalies by Means of Hormones of Female Gonads. L. Nürnberger.—p. 240.
Clinical Estimation of Hyperemesis Gravidarum. R. Fikentscher.—p. 331.

Treatment of Benign Uterine Hemorrhages.—Penkert discusses the nature of menstrual hemorrhages and their irregularities in women beyond the age of 40 years. Then he gives his attention to the symptoms of abolished function, pointing out that they are most severe after roentgen castration and other forms of irradiation and that they are much less severe and less frequent, or even entirely absent, after removal of the diseased uterus with preservation of the ovaries. Even though the vaginal total extirpation of the uterus, without the ovaries, is not the ideal treatment of metropathias, as regards the absence of the symptoms of abolished function, as regards the rapidity of recovery and as regards the capacity to work again, it is by far superior to the roentgen castration; the same can be said about the abdominal total removal of the uterus without the adnexa in the presence of large myomas. After stressing the contraindications to the ray treatment of myomas, the author says that every benign uterine hemorrhage requires an exact diagnosis and then there arises the question, What is the best treatment for this patient? Roentgenologic treatment involves on the whole less risk and less responsibility than does an operation. Nevetheless, although the author was one of the first who introduced and advocated the roentgen treatment of myomas and metropathias, many years of observations and some disappointments have brought him to the point at which he resorts to this treatment only with reservations and in specially selected cases. He has come to the conclusion that, in spite of the great dangers that are involved in an operation, surgery is nevertheless the most prompt and best method.

Postpartum Intra-Uterine Interventions. — Geppert demonstrates that the prognosis of postpartum intra-uterine interventions that are carried out in modern clinics can be regarded as favorable as regards morbidity as well as mortality, provided of course the management of the delivery has been under clinical supervision from the beginning. The results obtained with postpartum intra-uterine interventions in the clinic are superior to those obtained in home practice, because the aseptic conditions and the presence of trained persons makes an intervention possible, before great loss of blood has taken place. To be sure, it is generally difficult to foresee disturbances of the period of the after-birth. It is known that they may appear without recognizable cause. For this reason a number of parturient women must undergo intra-uterine interventions in the home and thereby are exposed to greater hazards. However, the author thinks that women who in earlier deliveries experienced difficulties during the period of after-birth and those who have had abortions or curettages may expect difficulties in the delivery of the placenta in subsequent confinements and it has to be decided whether for these cases delivery in the clinic might perhaps be advisable.

Archiv für klinische Chirurgie, Berlin

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Typical Callus Formation After Ideal Reposition and Wire Suture of Fractures of Thigh. M. Biebl.—p. 171.
Papillomatous Ovarian Mucicystoma Associated with Myxoglobulosis of Appendix. O. Bittmann.—p. 228.
*Diagnosis and Surgical Treatment of Acute Venereal Lymphogranuloma. C. Reimers.—p. 264.
Organoid Character of Fibro-Adenoma of the Breast. H. Güthert.—p. 312.
*Therapy, Pathologic Anatomy and Concept of Thyrotoxicosis. A. Troell.—p. 347.
Effect of Padutin on Circulation. D. Schneider and P.-W. Springorum.—p. 373.
Surgical Treatment of Hyperthyrosis. T. von Matolcsy.—p. 390.

Acute Venereal Lymphogranuloma. — Reimers reports forty-five cases of acute venereal lymphogranuloma treated at the surgical clinic of the Military Medical School in Canton, China. In smears made from human lymph nodes and infected brain of white mice stained by the Giemsa method, the author found both intracellular and extracellular "granulocorpuscular" elements. However, the author is uncertain as to the practical clinical value of this observation in early diagnosis. In his experience the intracerebral implants of lymph node material or of pus in white mice permits an earlier diagnosis than the Frey antigen, even though it requires not less than eight days. The identity of climatic bubo and of venereal lymphogranuloma was established by the crossed reaction of the European antigen and an antigen prepared by the author. The microscopic examination of the tissues, especially in mixed infections, is as valuable in diagnosis as the Frey reaction. For therapeutic purposes the author divided his cases into the following stages: (1) the stage of abscess formation, (2) the stage of inguinal lymph node enlargement, (3) the stage of iliac lymph node enlargement, (4) the fistulous stage and (5) the residual ulceration. He advocates conservative treatment for the acute stage. For the second and fourth stages he suggests radical removal of the involved glands, while involved iliac lymph nodes are to be operated on only in exceptional cases. On the basis of his observations in several of the cases, syphilis likewise is a factor in the formation of genito-anorectal elephantiasis (esthiomene). The author stresses the point that application of the Frey antigen tests in the differential diagnosis of all chronic inflammatory diseases of the large and small intestine should be of value, because the differentiation of venereal lymphogranuloma from other chronic inflammatory diseases on a clinical basis alone is not possible.

Thyrotoxicosis.—Troell operated in 1,842 cases of thyrotoxicosis during the period from 1930 to 1937. His operative mortality, which up to 1924 amounted to 9.6 per cent, fell considerably after the introduction of compound solution of iodine in 1925. This mortality in 354 surgical cases between January 1925 and October 1930 was 3.3 per cent, while the mortality from that period up to 1937 in 579 surgical cases amounted to 2.6 per cent. In the begining only patients with diffuse exophthalmic goiter were placed on preoperative treatment with compound solution of iodine. Later this treatment was extended to highly toxic cases of nodular goiter. In the cases of nodular goiter of mild toxicity the author used both before and after operation a preparation called "kinifos." This is a preparation consisting of quinine, sodium bromide, sodium phosphate and calcium lactate. The reason for withholding compound solution of iodine from patients with toxic nodular goiter was partly the fear of inducing an iodine thyrotoxicosis and partly the clinical and histologic differences between the two types of the disease. However, the difficulties attending a sharp differentiation of the two types, as well as a careful analysis of individual cases, compelled the author to give up the dualistic concept of thyrotoxicosis and assume instead that the differences in the clinical

picture of the two are rather to be explained by the age and constitution of the patient. The demonstration by Okkels of a hypertrophy of the Golgi apparatus characteristically present in all cases of thyrotoxicosis lends considerable support to the theory of nosologic identity of the two clinical pictures. The average duration of preoperative treatment with compound solution of iodine amounted to ten days. Debilitated patients were given, besides the solution, insulin, blood transfusions and intravenous dextrose. On the completion of the operation the patient was given 1,000 cc. of 5 per cent dextrose solution subcutaneously and the same amount by rectum, the latter with addition of 1.25 cc. of tincture of opium and 2 cc. of compound solution of iodine. Very sick patients and those with a severe postoperative reaction were given twice the amount, with the addition of 5 cc. of the compound solution of iodine in the intravenous dextrose infusion.

Zeitschrift f. d. ges. experimentelle Medizin, Berlin

104: 629-806 (Jan. 16) 1939. Partial Index

Determination of Hemoglobin in Spontaneous Diuresis. U. Schaare.—p. 656.
Influence of Feeding with Spleen and Liver on Number of Erythrocytes in Dogs in Which Anemia Has Been Induced by a Gallbladder Fistula. A. Zih.—p. 672.
Action of Creatine on Blood Sugar in Frogs. A. Lanari.—p. 679.
Behavior of Ketone Bodies in Experimental Impairment of Liver. G. Mikulicich and S. Markees.—p. 682.
Influence of Nicotine on Mineral Constituents of Blood: Calcium Content of Blood. L. H. Strauss and P. Scheer.—p. 691.
*Interrelations Between Insular Apparatus of Pancreas and the Gonads. Erna Hoffmann.—p. 721.
*Significance of Histamine and of Its Action as Cause of Late Death After Burns. E. Bernhard-Kreis.—p. 756.

Relation of Insular Apparatus of Pancreas to Gonads.—Hoffmann states that clinical and experimental observations indicate that relations exist between the islands of Langerhans and the ovaries or testes. The glycosurias of pregnancy indicate interrelations between the insular apparatus of the pancreas and the ovaries. She reviews the relations of pancreatic disturbances to the genital functions in women and men, pointing out that diabetes may produce amenorrhea and atrophy of the ovaries and of the uterus. Moreover, diabetic women are frequently sterile. Diabetes in men is frequently accompanied by impotence; in fact, impotence often exists before the diabetes has been recognized. Atrophy of the testes and azoospermia result in some diabetic men. The author further reviews the literature on the pathologic-anatomic changes in the gonads of animals in which diabetes was artificially produced and in the insular apparatus of castrated animals. Since the reports about the effects of castration on the insular apparatus were contradictory, she made morphologic studies on male mice. Mature male mice were castrated and, after various lengths of time, the pancreases of these animals were compared with those of normal animals. Summarizing her observations, the author says that relations exist between the gonads and the insular apparatus of the pancreas because castration is followed by a considerable increase in the incretory tissue. The counting and measuring of the islands indicated that this increase of incretory tissue is the result of an enlargement of existing islands. A relative increase, by reduction of the excretory tissue, could be excluded on the basis of the counting and measuring of the islands. Compared to normal values, the increase in insular tissue amounts to approximately 80 per cent. Enlargement of the islands is accomplished by transformation of excretory tissue into insular tissue. From the fact that castration causes an enlargement of the islands it may be concluded that the gonads exert an inhibiting effect on the insular apparatus but that the pancreas, on the other hand, stimulates the gonads. Whether this mutual modification is direct or whether other organs, such as the hypophysis, intervene is a problem that remains to be solved.

Histamine and Late Deaths After Burns.—According to Bernhard-Kreis, the problem of the ultimate cause of death from burns, particularly of late death, has not been solved. Continuing earlier animal experiments on connections between the mechanism of anaphylactic shock and that of damage by heat, he found that, as regards the changes in the organs, former observations were corroborated. He observed that by the repeated injection of extracts from organs that have been damaged by heat it is possible to produce changes which greatly resemble those which are produced by heat directly. Thus it can be concluded that there are no corroborating factors for direct connections between burns and anaphylaxis. The animals uniformly exhibit the signs of a steadily progressing cachexia no matter whether they have been treated with organic macerations that contained protein or with decoctions and roasting extracts that were free from protein but contained peptones and albumoses. The resulting organic changes are predominantly of the parenchymatous degenerative type; however, a comparison with those resulting from poisoning with pure solutions of histamine reveals that they cannot be ascribed to the fact that histamine acts in the extracts. In the organ extracts, particularly those from the skin and the musculature, the biologic methods of assay did not reveal the presence of histamine except in two unusual cases. This applies to the cold macerations of unchanged native organs as well as to the decoctions and roasting products. The action of these extracts and the action of the comparative processes in the living (scalding) is thus ascribed to roasting products and to peptones and albumoses. Action of histamine or of similarly acting substances (H-substances) must still be rejected.

Vestnik Khirurgii, Leningrad

56: 159-308 (Aug.) 1938. Partial Index

Resuscitation of Animals After Fatal Poisoning with Chloroform. I. P. Petrov and Z. I. Strukova.—p. 159.
*Utilization of Human Fat in Surgery. A. D. Kartavova.—p. 169.
Procaine Hydrochloride Block in Fractures of Ribs. L. M. Kapitsa.—p. 176.
Operative Approach to Tumors of the Occipital Fossa. I. S. Babchin.—p. 181.
Skin Temperature in Various Stimulations of Sympathetic Nervous System. A. I. Arutyunov and N. V. Semenov.—p. 188.

The Use of Human Fat in Surgery.—Kartavova calls attention to the fact that fat may act as a source of water in patients with disturbed water balance in addition to constituting the principal source of reserve energy of the organism. Utilization of fat for parenteral administration to patients unable to take nourishment by mouth has been attempted from time to time without definite results. The author reports her experiences with parenteral administration of human fat in fifty cases. The method of preparation is as follows: Fat obtained in the course of an operation is washed several times with cold water, cut up into small pieces and placed in an autoclave for from two to two and one-half hours, filtered through four thicknesses of gauze and sterilized by boiling. The resulting substance is a thick, yellow, odorless fluid with neutral reaction. Another source of fat is that taken from cadavers of persons dying suddenly. The average dose injected subcutaneously amounted to 50 cc. As much as 200 cc. could be administered without untoward effects. The injected fat is readily absorbed and produces no ill effects. It is indicated after resection of the stomach, in grave cases of peritonitis with continuous vomiting and in patients exhausted from suppurative disease.

Vrachebnoe Delo, Kharkov

20: 561-640 (No. 8) 1938. Partial Index

Effect of Antireticular Cytotoxic Vaccine on Healing of Fractures. O. A. Bogomolets.—p. 565.
Question of Capacity of Cells of Malignant Neoplasms for Differentiation. A. D. Timofeevskiy.—p. 569.
Alteration of Functional State of Active Mesenchyma in Allergy Growth of Malignant Neoplasms. Yu. A. Spasokukotskiy.—p. 581.
Metabolism and Physicochemical Characteristics of Malignant Tumors. E. Ya. Sterkin.—p. 593.
*Effect of Estrogenic Substance and Cholesterol on Growth of Neoplasms. I. M. Peysakhovich.—p. 603.
*Diagnosis of Cancer of Pancreas. V. M. Kogan-Yasniy and A. Ya. Altgausen.—p. 611.

Estrogen and Cholesterol in Growth of Neoplasms.—According to Peysakhovich, introduction of large amounts of cholesterol into the organism of an animal with experimental neoplasms (mice and rats) leads to an increase in the average weight and rate of growth of the neoplasm. The mechanism of this effect is bound up with factors having to do with hypercholesterolemia. He believes that lowering of the function of the reticulo-endothelial system, as a result of its partial blockade with cholesterol, is an important factor. Hyperestrogenization in mice and rats leads to a marked increase in the tendency to growth and the weight of all transplanted tumors. Structural

alterations in sex glands, resulting from long continued injections of large doses of endocrine preparations, bring about partial castration, thus creating conditions favoring activation of the growth of neoplastic new formations. Partial castration, in addition, causes a general alteration in the entire system of glands of internal secretion. The author did not observe a synergistic effect when the two substances cholesterol and estrogen were injected simultaneously. The two substances resemble each other in their ability to stimulate the growth of experimental neoplasms.

Cancer of the Pancreas.—Kogan-Yasniy and Altgausen emphasize the difficulty of diagnosis of cancer of the pancreas and its differential diagnosis from cancer of the liver, the biliary tracts and the duodenum and particularly from cancer of the papilla of Vater. The difficulty is due to the fact that the conditions mentioned present a number of similar symptoms, the principal of which is obstructive jaundice. Bergmann's statement that carcinoma of the papilla of Vater and of the duodenum can be diagnosed roentgenologically with considerable accuracy was not confirmed by their clinical experience. The authors emphasize that the determining factor in the differential diagnosis between cancer of the pancreas and cancer of the papilla of Vater is to be found in the functional disturbances of the pancreas. Glycosuria, which results from the invasion of the insular apparatus, is present in a considerable portion of the cases of pancreatic cancer. These cases are likewise characterized by rapid emaciation resulting from diminution of oxidizing processes and from inadequate assimilation of nourishment. Microscopic examination of feces reveals the absence or diminution of pancreatic ferments by the presence of neutral fat and undigested muscle fibers. In view of the fact that trypsin converts the amino acids leucine and tyrosine into indole, the quantitative determination of indican can serve as an accurate index of the excretory function of the pancreas. The authors cite several cases in which the determination of the internal and external pancreatic secretions made it possible to differentiate between carcinoma of the pancreas and that of the papilla of Vater. Their clinical experience gives support to an old statement of Leube that marked indicanuria speaks against cancer of the head of the pancreas.

Acta Medica Scandinavica, Stockholm

98: 289-440 (Jan. 25) 1939. Partial Index

Hyperthyroidism and Treatment with Compound Solution of Iodine. J. Tillgren and N. Sundgren.—p. 289.
Some Experiments with Lymph Gland Material from Cases of Infectious Mononucleosis. P. J. Wising.—p. 328.
*Relapsing Gastric Hemorrhages and Their Treatment. S. Hesser.—p. 340.
Familial Occurrence of Stenosis of Aortic Isthmus. E. Klemola.—p. 355.
Heparin and Sedimentation of Blood. K. N. von Kaulla.—p. 374.
*Observations on Essential Thrombopenia (Morbus Maculosus Werlhofii). S. Heinild.—p. 385.
Sulfanilamide Treatment of Experimental Tuberculosis in Guinea Pigs. N. Levin.—p. 422.

Relapsing Gastric Hemorrhages and Their Treatment.—Hesser says that acute gastric hemorrhage still presents many unsolved problems. During recent years it has attracted interest, principally owing to a certain new attitude in the matter of treatment. Surgeons have urged that operations should be performed in many of these cases during the acute stage, to prevent threatened death from loss of blood. Nevertheless, in medical circles conservative therapy is still recommended, especially since Holmgren and Meulengracht claimed that the prognosis had been materially improved by the abandonment of starvation diet and by giving food in a liquid or semisolid form in sufficient quantities from the beginning of the treatment for gastric ulcers. In view of the fact that bleeding gastric ulcers are a common complaint, the question of treatment is of great practical importance. In this paper the author gives his attention chiefly to the relapsing gastric hemorrhages, which, judging from his own experience, constitute a substantial proportion of the large group of acute gastric hemorrhages. Analyzing a material of 406 patients with gastric hemorrhages, he says that in 284 one hemorrhage occurred and that in 122 two or more hemorrhages occurred; that is, relapses occurred in about 30 per cent of the cases. Among the relapsing cases one relapse is most usual (57 per cent) but two or more relapses are by no means unusual (up to twenty-two relapses in one case). The age of predilection for relapses is on the whole the same as for hemorrhages in general; that is, the frequency predominates in the ages between 30 and 60 years. In the matter of distribution by sex the same rule applies to relapses as to primary hemorrhages, namely that they are much more frequent in men than in women (more than twice as frequent). Regarding the anatomic situation of the ulcer, the author says that duodenal ulcers predominate considerably over ventricular ulcers (twice as frequent). Discussing the prognosis, he says that he observed four deaths in 122 cases of relapsing hemorrhage. The four patients who died were a man aged 84, a woman aged 79, a man aged 64 and a woman aged 41, which shows that, as in the case of primary hemorrhages, the more advanced ages seem most threatened. The author's material included thirty cases in which gastric operations were performed (gastro-enterostomy, and Billroth I and Billroth II) and gastric hemorrhages recurred once or more often. From this it appears that ventricular operations are by no means effective prophylactic measures against hemorrhages.

Essential Thrombopenia (Morbus Maculosus Werlhofii).—Heinild says that essential thrombopenia (idiopathic purpura with thrombocytopenia or hemorrhagic purpura) is a disease of unknown origin characterized by spontaneous hemorrhage of the skin and mucous membranes. Hematologic examination shows a great decrease in the number of blood platelets, absence or retardation of retraction of the clot, prolongation of the bleeding time and a decrease in the capillary resistance. The disease may have an acute or a chronic course. On the basis of the present status of knowledge on thrombopenic conditions, four groups can be differentiated: (1) essential thrombopenia, (2) symptomatic thrombopenia, (3) hyperergic thrombopenia and (4) hypersplenic thrombopenia. After giving the characteristics of these four groups the author reports and analyzes six cases of his own observation. He shows that the first case must be designated as a symptomatic thrombopenia of unknown origin. In this case the course of the disease was malignant, affecting chiefly the bone marrow and, as found at necropsy, toxic changes developed in the lymph glands. Cases 2, 3, 4 and 5 present aspects which closely correspond to the definition of chronic essential thrombopenia. Case 6 is of interest because it is one of those transitional cases which should be placed between the real forms of purpura without decrease in platelets (idiopathic purpura) and essential thrombopenia. The author thinks that the observations of several other investigators and his own investigations justify the theory that deficiency of the capillaries is constantly present and is of fundamental importance in this disease because its degree of severity coincides with the clinical manifestations. But of course it must be remembered that the constantly present symptom thrombopenia is of equal importance. It is of special interest that essential thrombopenia frequently appears at the time of the climacteric, that at this time of life a tendency to purpura has previously been proved experimentally, and that the so-called medicamental allergic thrombopenia seems to have a predilection to appear at this period. Hence it is natural to suppose that disturbances in the endocrine balance also predispose to the development of so-called essential thrombopenia. In this publication it has been proved that the thrombopenic condition is not due to the cessation of the production of estrogen as such. Nor are endocrine variations the only predisposing causes, for the disease often appears in early childhood. This is a warning against the expectation of good results from the conventional treatment of thrombopenic conditions. It is evident that while symptomatic thrombopenia is frequently caused by fundamental disturbances in the hemopoietic system and hence beforehand renders any therapy unavailing, allergic thrombopenia on the other hand has a tendency to spontaneous recovery. The good effect of the splenectomy is indisputable and it seems due more to the improved function of the capillaries than to any increase in the number of platelets. There is no doubt that splenectomy would produce a good result in cases 2, 3, 4 and 5. The present examination, however, does show that conservative treatment, when consistently effected, may cause a considerable improvement in the function of the capillaries. It will be a problem for the future to elucidate the origin of essential thrombopenia.